DOCUMENT RESUME

ED 355 124 SE 053 495

AUTHOR	Thiessen, Diane, Ed.; Matthias, Margaret, Ed.
TITLE	The Wonderful World of Mathematics: A Critically Annotated List of Children's Books in Mathematics.
INSTITUTION	National Council of Teachers of Mathematics, Inc., Reston, Va.
REPORT NO	ISBN-0-87353-353-4
PUB DATE	92
NOTE	254p.
AVAILABLE FROM	National Council of Teachers of Mathematics, 1906 Association Drive, Reston, VA 22091-1593.
PUB TYPE	Reference Materials - Bibliographies (131)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Annotated Bibliographies; *Childrens Literature; Elementary Education; Geometric Concepts; Instructional Materials; Literature Reviews; Mathematical Concepts; Mathematics Education; *Mathematics Instruction; *Mathematics Materials; Measurement; Number Concepts; Preschool Education; Resource Materials; Spatial Ability; *Supplementary Reading Materials
IDENTIFIERS	*Reading Mathematics Relationship

ABSTRACT

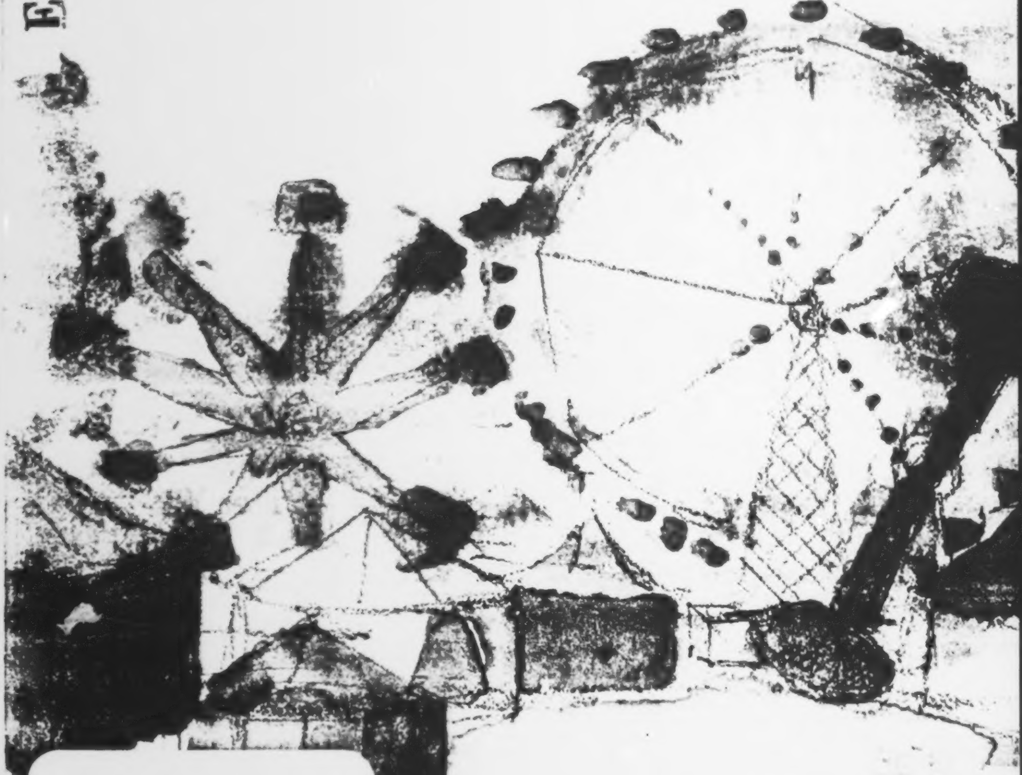
The National Council of Teachers of Mathematics (NCTM) has articulated goals in the pursuit of mathematics literacy that include learning to value mathematics, becoming confident in one's mathematics abilities, becoming a mathematical problem solver, learning to communicate mathematically, and learning to reason mathematically. Literature that explores mathematical concepts seems to be a natural tool for attaining those goals. The NCTM formed a committee to read and review books and to prepare the manuscript for this annotated bibliography of children's books in mathematics. This book provides reviews for approximately 500 books in mathematics for preschool through grade 6. Each review describes the book's content and accuracy, its illustrations and their appropriateness, the author's writing style, and whether activities for the reader are included. Each book is rated in terms of its usefulness in teaching mathematical concepts as highly recommended, recommended, acceptable, or not recommended for mathematical concepts. The grade level of each book is included in the bibliographical entry. The books have been classified into four main categories with respect to their mathematical content: (1) early number concepts; (2) number extensions and connections; (3) measurement; and (4) geometry and spatial sense. An overview for each of the categories can be found at the beginning of each section. Two indexes list the books by author and by title. (MDH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED355124

The Wonderful World of Mathematics

Edited by Diane Thiessen and Margaret Matthias



"PERMISSION TO REPRODUCE THIS MATERIAL IN **OTHER THAN PAPER COPY** HAS BEEN GRANTED BY

Jean Carpenter

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

BEST COPY AVAILABLE

A critically annotated list of children's books in mathematics

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

National Council of Teachers of Mathematics

THE WONDERFUL WORLD
OF MATHEMATICS

THE WONDERFUL WORLD OF MATHEMATICS

A CRITICALLY ANNOTATED LIST OF CHILDREN'S BOOKS IN MATHEMATICS

Edited by

Diane Thiessen

University of Northern Iowa

and

Margaret Matthias

Southern Illinois University at Carbondale

NATIONAL COUNCIL OF
TEACHERS OF MATHEMATICS

Copyright © 1992 by
THE NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS, INC.
1906 Association Drive, Reston, Virginia 22091-1593
All rights reserved

Library of Congress Cataloging-in-Publication Data:

The Wonderful world of mathematics : a critically annotated list of children's books in mathematics / edited by Diane Thiessen and Margaret Matthias.
p. cm.
Includes bibliographical references and index.
ISBN 0-87353-353-4
1. Mathematics—Juvenile literature—Bibliography. I. Thiessen, Diane. II. Matthias, Margaret.
Z6651.W85 1992
[QA40.5]
016.51—dc20 92-36493
CIP

The publications of the National Council of Teachers of Mathematics present a variety of viewpoints. The views expressed or implied in this publication, unless otherwise noted, should not be interpreted as official positions of the Council.

Printed in the United States of America

Contents

Preface vii

Acknowledgments xi

Early Number Concepts 1

- Counting—One to Ten 4
- Chants, Songs, and Rhymes 20
- Number in Other Cultures 27
- Counting—Zero 33
- Counting—Large Numbers 36
- Counting—Place Value 44
- Counting—Bar Graphs 48
- Counting—Partitions 51
- Counting—Operations 54
- Counting—Other Number Concepts 61

Number—Extensions and Connections 71

- Number Concepts 74
- Number Systems 90
- Operations 95
- Statistics and Probability 103
- Number Theory, Patterns, and Relationships 109
- Reasoning—Classification, Logic, and Strategy Games 119
- Technology and Mathematics 128

Measurement 133
    Beginning Measurement 135
    Measurement Concepts and Systems 142
    Measurement of Time—Telling Time 153
    Measurement of Time—Concepts 159
    Measurement of Time—Extensions and Connections 167
    Money 172

Geometry and Spatial Sense 177
    Beginning Spatial Concepts 179
    Shapes 182
    Geometric Concepts and Properties 195
    Incidental Geometry—Origami 206
    Incidental Geometry—Optical Illusions 209
    Incidental Geometry—Drawing 213

Index by Author 216

Index by Title 229

Preface

> There are many persistent obstacles to making significant changes in mathematics teaching and learning in schools. Among these are the beliefs and dispositions that both students and teachers bring to the mathematics classroom, as well as the assumptions held by school administrators, parents, and society in general about mathematics curriculum and instruction.
>
> *Professional Standards for Teaching Mathematics*

Traditional beliefs and dispositions both of students and of adults have relegated mathematics to a subject mastered by a few. No one wants to admit being unable to read, but it has been socially acceptable to admit mathematical illiteracy. Within the context of a highly technological society, changing these beliefs and dispositions is critical.

In our work with preservice and in-service elementary school teachers, parents, and others, we have found that children's literature in mathematics has been a valuable tool in the transition from negative to positive attitudes. The attitude of the reluctant mathematician can be changed by the exploration of quality mathematics books for children. Through sharing these books, adults and children not only will be entertained but will develop confidence in their ability to engage in mathematical tasks involving problem solving, reasoning, and communications. Our analysis of children's books and the ways in which they can be used has revealed a rich untapped resource for developing mathematical power. These books can be appreciated by adults as well as by children and can be used on a one-to-one basis between parent and child, as a classroom exploration for a group of children, or for individual enjoyment.

The *Curriculum and Evaluation Standards for School Mathematics* (NCTM 1989, p. 5) has articulated the following goals for all students in the pursuit of mathematical literacy:

- Learning to value mathematics
- Becoming confident in one's own ability
- Becoming a mathematical problem solver
- Learning to communicate mathematically
- Learning to reason mathematically

The focus on process in mathematics is concurrent with a similar focus in the area of reading. Literature that explores mathematical concepts appears to be a natural tool for attaining goals in both of these areas. Awareness of the potential role of quality children's books led to the compilation of this resource for educators.

The National Council of Teachers of Mathematics formed a committee to read and review books and to prepare the manuscript for an annotated bibliography of children's books in mathematics. In the past three years, approximately 500 children's books in mathematics for preschool through grade 6 have been read and reviewed. These books are trade books, not workbooks or teacher-resource materials. The 1988–89 and 1989–90 editions of *Children's Books in Print* were the main resources for compiling a book list. Other sources included *Children's Catalog*, *Elementary School Library Collection*, and *Forthcoming Books*. Additionally, individual recommendations were sought and considered. A surprisingly large number of recommended books could not be obtained from the publisher or through library searches.

A format was established to ensure the consistency of the reviews. Each review describes the book's content and accuracy, its illustrations and their appropriateness, the author's writing style, and whether activities for the reader are included. All books were read and discussed, and all reviews were edited by both editors. Because of the difficulty of locating books for review, approximately half the total reviews were authored by Matthias and Thiessen.

A dilemma in book selection was deciding which books had mathematics concepts as a primary emphasis and which books contained mathematics that was incidental. Many books were clearly mathematics concept books. The line dividing these books from books where mathematics was incidental was not clearly defined. A number of the latter books can be a springboard for exploring different concepts or be a catalyst for integrating different topics. This bibliography contains the books that are primarily mathematics. In the bibliographical entries, a notation indicates whether the book develops a single concept or multiple concepts. The books are classified as listed in the table of contents. Some books are cross-referenced under more than one category.

An overview for each of the four main categories can be found at the beginning of each section. More detailed descriptions of the types of books are before each subsection. Vignettes in the overview and some subsections give a flavor of how some of the books have been successfully used in classrooms. Situations from elementary school, junior high school, and college classrooms illustrate how students of different ages can enjoy and use the books. By exploring appropriate books in the college classroom, preservice teachers can extend their knowledge about resources, teaching activities, and children's thinking all at the same time.

Each book is rated in terms of its usefulness in teaching mathematical concepts as highly recommended (★★★), recommended (★★), acceptable (☆), or not recommended for mathematics concepts ( ). The grade level (from preschool [PS] to grade 6) of each book as stated in *Children's Books in Print* is included in the bibliographical entry. On the basis of our experiences with children, we question some of the recommended grade levels. A number of the books can be used with a broader grade range than that indicated. The annotations reflect this thinking.

The ISBN numbers and the cost of the books are also included in the entries. Because prices fluctuate, the price cited should be considered an estimate. Some of the books are available with paper covers or with reinforced, or library, binding; this information has been recorded next to the appropriate ISBN number.

A number of out-of-print books, marked OP beside the ISBN numbers, have been included because of their exceptional quality or because they represent a category for which there is a shortage of good books. These books are often available in school and public libraries. Continued demand for popular out-of-print books may result in publisher reprints. Some older books that were not listed as being in print were sent by the publisher when we requested them, implying that they *were* available. Grade levels and prices were not always available for books in this group. If some of your favorite books for exploring mathematics are missing, please send the editors the title, author, and publisher and year, if possible.

Throughout the review process, it was noted that children's books in mathematics are dominated in number and quality by the counting book. Faced with more than 160 counting books, we were forced to examine the possible reasons for this dominance. The importance of beginning reading and the acceptance of counting as the first step toward number sense combine to focus the public's attention and demand on the colorful, picture-book entry into mathematics. The supply, understandably, responds to the demand. The dominance of the counting book may also reflect the restricted societal view that mathematics is limited to number and that the exploration of more complex mathematical concepts is only for the few. Changing these attitudes is a constant challenge.We can only hope that as our readers join us in our journey of discovery, they will contact book stores and publishers to place their orders for the books that have offered them the most insight into the excitement and challenge that the world of mathematics has to offer.

This bibliography is the culmination of the Review Committee's work. We hope the format and the information in the reviews will provide a sufficient basis for the intelligent selection of exciting books that will encourage explorations in mathematics for children in school and at home. All of us on the Review Committee wish you happy reading and growth in mathematics prowess.

Nancy S. Angle, Cerritos College, California
Marilyn Bieck, Encinitas School District, California
Audrey V. Buffington, Wayland Public Schools, Massachusetts
Mary Jo Cliatt, University of Mississippi
Lynn Columba, Lehigh University, Pennsylvania
Kay Dean, Northern Arizona University
F. M. (Skip) Fennell, Western Maryland College
Cathy Grace, Southern Association on Children under Six
Ann Harsh, Hattiesburg Public School District, Mississippi
Audrey Jackson, Parkway School District, Creve Coeur, Missouri
Joanie Janis, University of California
Eula Ewing Monroe, Western Kentucky University
William Nibbelink, University of Iowa
Barbara Reed, Waverly Community Schools, Lansing, Michigan
Merrilyn Ridgeway, Arizona Department of Education
Nina L. Ronshausen, Texas Tech University
Sally Schneider, St. Raphael Elementary School, Louisville, Kentucky
Susan Sherwood, Wartburg College, Iowa
Rose Strahan, Delta State University, Mississippi
Timothy J. Touzel, University of South Carolina
Sharon L. Young, Palm Harbor, Florida

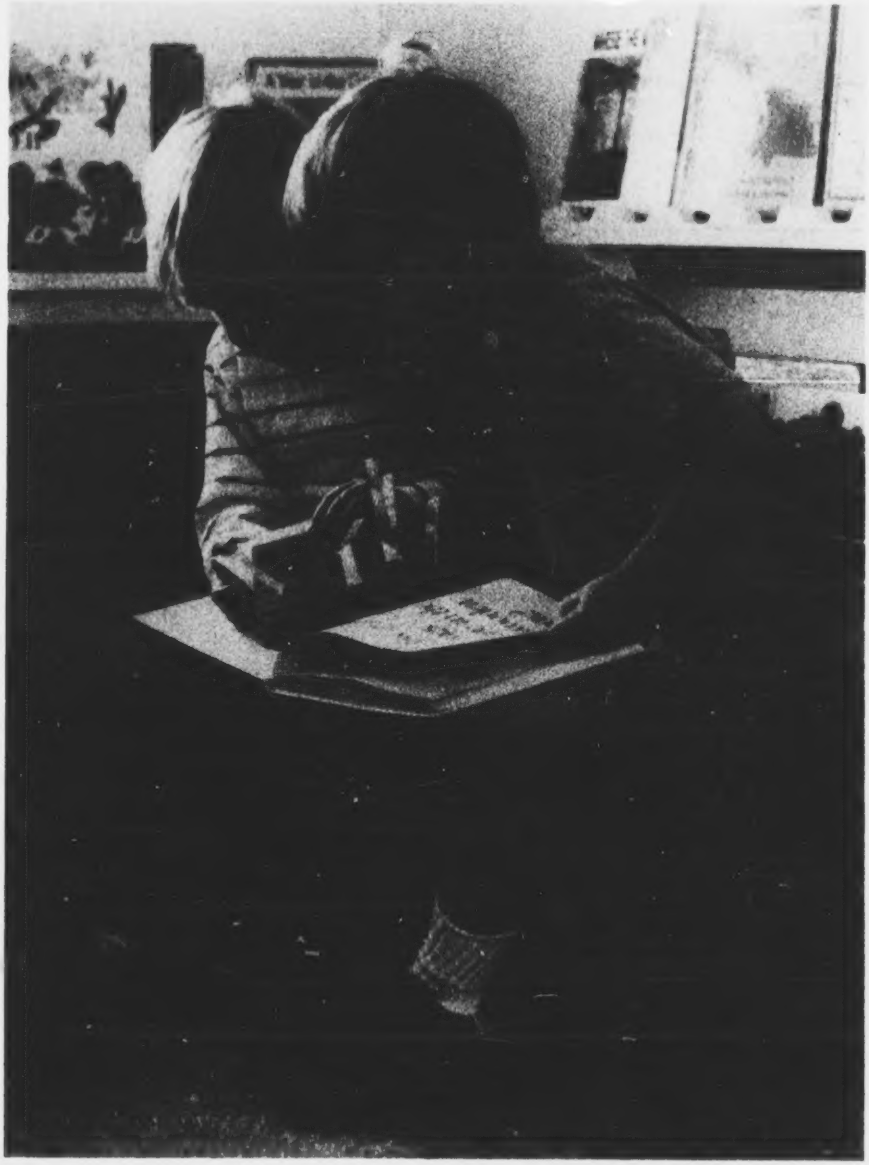
DIANE THIESSEN
MARGARET MATTHIAS
Editors

Acknowledgments

Many individuals and institutions contributed to creating the book list and obtaining the books. Special thanks to—

- the staffs of the University of Northern Iowa Interlibrary Loan Office, Price Laboratory School Library, the Shawnee Library System of Illinois, and the Cooperative Children's Book Center at the University of Wisconsin—Madison for help in obtaining books;
- Timothy J. Touzel and David Whitin for their recommendations of additional entries;
- Fran Curcio and Doug Owens, former chairs of the NCTM Educational Materials Committee, and Cynthia Rosso and the staff at NCTM for their assistance;
- Lucille Lettow, University of Northern Iowa Youth Librarian, for her invaluable counsel in recommending and securing books, locating book lists, and offering advice and encouragement throughout the project.

This manuscript was prepared with the cooperation of the International Reading Association.



Early Number Concepts

WITH so many counting books to choose from, we were faced with the problem of how to organize this large category of books in as user-friendly a way as possible. As we read and reread the total counting category looking for patterns and trends that would allow us to subcategorize, we became aware of the many opportunities that any one of these books could offer in the hands of a creative teacher. Each one could be used to emphasize processes in the development of problem-solving skills and mathematical reasoning. While using these books with youngsters, our experiences have taught us how difficult it would be to avoid communicating the mathematical concepts included. Developing meaning for numerals and number words is critical in most of the simplest counting books, and frequent exposure to these books cannot help but familiarize children with the beginning language of mathematics. We were also excited to find how many of these misleadingly simple books made wonderful stepping-stones or connections from number to other, more complex mathematical concepts.

The primary intent of practically all the books in this category is to give opportunities for counting. Each counting book is unique, but as you read more, certain characteristics across books will be noted. Most books are organized around a common theme. Some books have a definite story line, which is told by pictures or text. Practically all books involve rational counting, but since the sets are usually presented in sequence, readers could rely on rote counting as they proceed from page to page. By verifying the appropriate number of objects on a page, children are involved in rational counting experiences. When learning a concept, children need to build connections among the models, symbols (numerals), and word names, as shown in figure 1. Most books include models, but not all include both numerals and word names. Some books include counters in one-to-one correspondence to the objects depicted on the opposite page. The child's experiences with these books can be extended by relating counting to other situations in the young reader's environment.

We have classified the counting books into ten categories. Each category is preceded by a short explanation to help clarify its potential use. It should be noted that the classification system we have devised for the

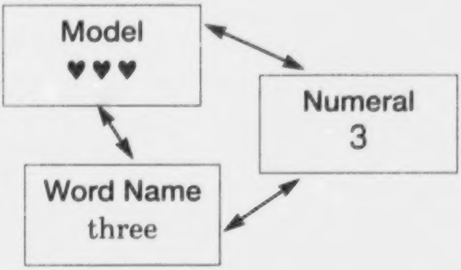


Fig. 1. Number concepts

counting books, or any other major category, is not perfect. Placement in one category does not mean a book may not belong to another category. We have tried merely to identify the topic with which each book has the closest relationship. The categories of counting books are “Counting—One to Ten”; “Chants, Songs, and Rhymes”; “Number in Other Cultures”; “Counting—Zero”; “Counting—Large Numbers”; “Counting—Place Value”; “Counting—Bar Graphs”; Counting—Partitions”; “Counting—Operations”; and “Counting—Number Concepts.”

The following description of a first-grade classroom in Cedar Falls and the children’s responses to the counting book *Count and See* by Hoban (1972) should help to illustrate the potential that these kinds of books can have in the development of mathematical processes and number concepts:

> The first graders were sitting on the floor around their teacher, Sue Sherwood, as she read to them after lunch. The children verified each set by counting that the number of objects depicted was correct. On one page, they noticed that the counters were grouped in fives; so the children counted by fives to determine the total. On another page, after a child counted to verify that ten counters were in each set, the first graders counted by tens. The teacher asked them, “If we count by tens, we get fifty. How many groups of ten is fifty?”
>
> As part of the lesson, the teacher asked the students to predict the next number after each page. After sharing the pages showing the first fifteen counting numbers, the teacher told them that the pattern had changed. After they discussed the next number, which was 20, they correctly predicted that the next number was 30. They continued with their predictions until they predicted that 60 would follow 50. At this point, the teacher explained that that was a good guess but that the pattern had changed again, and there was only one page left in the book. In unison, the first graders excitedly yelled, “One hundred! One hundred!” They continued with their mathematics lesson because they were currently studying place value.

Counting— One to Ten

Since counting is the initial experience for the youngest readers in developing number concepts, it seemed appropriate to place the simplest books, which focus on counting one through ten or fewer, in a category of their own. Within this first group of books are many opportunities for the young reader to develop a growing understanding of number. Authors have chosen a number of ways to motivate children to count. The story form of Yeoman's *Sixes and Sevens,* the rollicking rhyme of Calmenson's *One Little Monkey,* and the mystery provided by the manipulative toy book design of Carter's *How Many Bugs in a Box?* are only a few examples of the variety that awaits eager young readers in this category. Some books, such as Bang's *Ten, Nine, Eight,* introduce counting backward. Numerals and number words are reinforced in many of the books; Blumenthal's *Count-a-saurus* is one example. Finally, Hoban's *1, 2, 3* places the counting experience in the child's everyday life.

Archambault, John. *Counting Sheep*. Illustrated by John Rombola. New York: Henry Holt & Co., 1989.

ISBN 0-8050-1135-8 $14.95

☆ Single concept, PS–2

Matisse-like graphics and vibrant color illustrate a child's dream of counting animals to fall asleep. Rather than counting sheep, the child envisions one pink rhinoceros, two tall giraffes, ..., ten stars. Some sets would be difficult for the young child to count. Most of the eight heads for the eight lazy alligators are partially hidden in the water. The scene for the number four shows one entire dinosaur but only the heads and outlines of the other three. Partial outlines are used in other layouts; this is a sophisticated concept for young counters.

Baby's First Counting Book. New York: Platt & Munk, 1988.
ISBN 0-448-40863-5 $3.95

☆ Single concept, PS

Thick, board pages and glossy illustrations offer beginning labeling and counting opportunities for the tiniest tot. Numerals and the names of the playful animals to be counted provide the minimal text.

Bang, Molly. *Ten, Nine, Eight.* New York: Greenwillow Books, 1983.
ISBN 0-688-00906-9 $11.95
ISBN 0-688-00907-7 (library binding) 11.88
ISBN 0-14-050543-1 (paper) 3.95

★★ Single concept, PS–1

Ten, Nine, Eight is a colorfully illustrated countdown to bedtime featuring a little African-American girl and her father. A very loving atmosphere is created through inviting illustrations and rhythmic, poetic words. Some of the counting opportunities are events rather than pictures, such as "3 loving kisses on cheeks and nose." Counting from ten to one is the primary objective.

Blumenthal, Nancy. *Count-a-saurus.* Illustrated by Robert Jay Kaufman. New York: Macmillan Publishing Co., 1989.
ISBN 0-02-749391 $12.95

★★ Single concept, PS–3

Here is a tongue twister all youngsters can enjoy. *Count-a-saurus* explores ten different species of dinosaurs in rollicking rhyme from "One Stegasaurus standing in the sun" to "Ten Hadrosaurids sporting funny hats." The double-page illustrations are hilarious, adding to the light tone of this delightful book. Numerals and number words are given. A pronunciation guide on each page will help children with the difficult dinosaur names. Additional information about featured dinosaur species can be found at the back of the book in an "append-a-saurus."

Bright, Robert. *My Red Umbrella.* New York: William Morrow, 1985.
ISBN 0-688-05249-5
ISBN 0-688-05250-9 (paper) $3.95

☆ Single concept, PS–1

Delicate black-and-white line drawings are interrupted only by the bright red splash of color provided by the umbrella, which grows to accommodate more and more animals. Sets of animals from one to four gather under the little girl's umbrella to shelter from the rain. There is no attempt in the simple text to highlight number words; the counting objective is only implied.

Calmenson, Stephanie. *One Little Monkey*. Illustrated by Ellen Appleby. New York: Parents Magazine Press, 1982.

ISBN 0-8193-1091-3 $5.95
ISBN 0-8193-1092-1 (library binding)

★★ Single concept, PS–3

Cumulative story form and rhyming text unfold to reveal the rollicking events of a jungle stampede caused when the animals misunderstand the reason for the monkey's dash through the treetops. The rhyme bounces along as two hippos, three zebras, four antelope, and so on, flee and the pages become more and more crowded with colorful creatures. Number concepts from one to ten are clearly presented by the expressive illustrations of the animals.

Carle, Eric. *1, 2, 3 to the Zoo*. New York: Philomel Books, 1990.

ISBN 0-399-61172-X $13.95
ISBN 0-399-21847-X (paper) 5.95
ISBN 0-399-21970-6 (paper) (Sandcastle Books) 5.95

★★ Single concept, PS–2

Colorful collages of a train full of lively zoo animals effectively introduce sets and numerals from 1 though 10. Each successive train car carries a different group, from one elephant, two hippopotamus, three giraffes, to ten birds. Across the bottom of each page is a tiny silhouetted diagram of the entire train and the cargo that has been introduced. The last page shows the silhouettes of the empty cars, since the animals are in their new zoo environment. This is a reprint of a book originally published in 1968.

______. *The Very Hungry Caterpillar*. New York: Philomel Books, 1987.
See Time Concepts

Carter, David A. *How Many Bugs in a Box?* New York: Simon & Schuster, 1988.

ISBN 0-671-64965-5 $10.95

★★★ Single concept, PS–2

Cleverly designed pop-ups introduce the numbers from one to ten in this sturdy book. On each of the double pages the reader is asked, "How many bugs are in the (blue, green, tall, square, thin, small) box?" The adjectives well describe the variety of intriguing boxes the reader is to explore. Each pop-up is unique; the flaps fold down or up or to the left or pull out or up or to the right. Each number concept is illustrated with a unique set of colorful "bugs" and named with the corresponding numeral and word name, for example, "5/Five/mellow/yellow/fish-bugs." There are surprises on each page, such as the "4/Four/fast/fleas" that scurry out of sight as the flap is opened. The book is a delight for readers of any age.

Chandler, Jean. *The Poky Little Puppy's Counting Book.* Racine, Wis.: Western Publishing Co., 1980.

ISBN 0-307-12252-2

★★ Single concept, PS–K

Poky Little Puppy explores his outdoor environment in this beginning counting book that introduces the numerals and word names of the numbers one through ten. The minimal story line includes simple descriptions of easily identifiable sets and is complemented with colorful illustrations of objects such as frogs, kittens, and strawberries. Each set with its corresponding numeral is revisited on the last pages. Obviously designed for the sometimes destructive fingers of a toddler, this sturdy cardboard book offers enjoyable opportunities for little fingers to point to and count familiar objects. The book is shaped like the poky puppy.

Corbett, Grahame. *What Number Now?* New York: Dial Books for Young Readers, 1982.

ISBN 0-8037-9735-4 $3.50

☆ Single concept, PS–K

This small, sturdy, cardboard-paged book introduces the numerals 1 through 10. The cover shows a puppetlike toy clown juggling the numeral 1; the inside cover shows him juggling the numerals 1 and 2. On each successive page one more numeral is juggled. Since the numerals are not in order, the reader is challenged to count each set and check that each successive numeral is represented. This book could be used to practice numeral recognition and rote-counting skills.

Davis, Jim. *Garfield Counts to Ten.* New York: Random House, 1983.

ISBN 0-394-86123-X $2.95

☆ Single concept, PS

The cardboard pages and cover of this simple counting book have been cut in the familiar outline of Garfield the Cat. Cartoon characters Odie and Nermal join Garfield in typical slapstick antics that clearly illustrate the number concepts. The simple text introduces the number names, the concepts one through ten, and the corresponding numerals.

Disney's Pop-Up Book of Numbers. New York: Disney Press, 1991.

ISBN 1-56282-021-4 $6.95

★★ Single concept, no age given

With Uncle Scrooge looking on from a window, Donald, Mickey, Minnie, and the Disney gang are busily cleaning house by discarding piles of junk; the sets of discards illustrate the numbers and numerals from one through ten. The final page shows all the discards carefully displayed in a pop-up of Uncle Scrooge's booth, where he is selling the accumulated items. Pop-ups are cleverly incorporated into the colorful, appealing illustrations in this sturdy slender book.

Ernst, Lisa Campbell. *Up to Ten and Down Again.* New York: Lothrop, Lee & Shepard Books, 1986.

ISBN 0-688-04541-3		$11.95
ISBN 0-688-04542-1	(library binding)	11.88

★★ Single concept, P–K

Numbers one to ten and down again are depicted in these pleasing illustrations pictured as photographs in an album. Each layout shows a "photograph" of the picnic scene with "snapshots" showing the appropriate numeral and each object to be counted. To represent five, the lush country scene shows five girls and separately frames each girl and the numeral 5 in six smaller snapshots. This format clearly shows the one-to-one correspondence between the two sets. When ten storm clouds appear, the children and adults start packing up and recounting the nine hats, eight baskets, seven boats.... Each scene is viewed by the duck who was serenely swimming on the opening page. The last scene shows the duck playing in the water, joined by other creatures. There is no text, but the detailed illustrations tell a charming story.

Friskey, Margaret. *Chicken Little, Count-to-Ten.* Illustrated by K. Evans. Chicago: Children's Press, 1946.

ISBN 0-516-03431-6	$10.60

☆ Single concept, K–3

Chicken Little's adventures as he tries to learn how to drink water introduce the symbols and words for numbers one through ten. As Chicken Little travels, he encounters one cow, two elephants, three camels, ..., but none of them is able to teach him how to drink. Simple text with clearly illustrated pictures relate this familiar, repetitive tale.

Gillham, Bill, and Susan Hulme. *Let's Look for Numbers.* Illustrated by Jan Siegieda. NewYork: Coward-McCann, 1984.

ISBN 0-698-02613-4	$4.95

☆ Single concept, PS–1

Crisp, bright photographs illustrate the number concepts one through ten. On the left-hand page, the number word alone is placed under a photograph of the appropriate number of objects, and on the right-hand side, a child is photographed interacting with a set of completely different items with a caption describing the scene; for example, "three" (leaves on a clover)—"three wheels on Daniel's tricycle." Much of the worth of this book will depend on the interaction of child and adult. Without help, the preschooler may be confused about what to count or how to name what is being counted! Additionally, the young child may have difficulty because of the quality and design of some of the photographs.

Goldborough, June. *Numbers.* Teaneck, N.J.: Sharon Publications, 1983.

ISBN 0-89531-150-X

☆ Single concept, PS

The animals represented on the pages of this sturdy unfolding board book provide opportunities for young children to count from one through ten. Although the pastel illustrations reinforce the counting sequence in this wordless picture book, they are lacking in vitality.

Gundersheimer, Karen. *1 2 3 Play with Me.* New York: Harper & Row Publishers, 1984.

ISBN 0-06-022176-3 $4.98
ISBN 0-06-022177-1 (library binding)

☆ Single concept, PS–1

Minna and Memo Mouse offer the reader an opportunity for counting and recognizing sets and introduce the word names and numerals for one through ten. On one page, a number concept is presented by charming illustrations of toys with which Memo plays. On the opposite page, Minna holds up the corresponding numeral. As each new set is introduced, the counted sets accumulate beside Minna; this gives the reader an opportunity to classify and recount previously counted sets. The illustrations are as delicate as the little characters and very appropriate to the size of this tiny book.

Haas, Dorothy. *The Hugs and Tugs Counting Book.* Illustrated by Tom Cooke. Beverly, Mass.: Parker Brothers Publishing, 1984.

ISBN 0-317-13462-0 $5.95

☆ Single concept, PS

As Baby Hugs and Baby Tugs look for someone to teach them to count, they meet one chicken, two bunnies, three honeybees, ..., and ten turtles, all of whom decide to join them in their search. Wish Bear finally comes to their rescue and introduces the numeral to represent each of the groups of animals. Another opportunity to practice what has been introduced is offered when Wish Bear picks berries for all the animals, "Just enough for everyone. Exactly enough. No more, no less." One-to-one correspondence is shown quite effectively, except for one page in the initial story line where only two of the four frogs can be seen. The typically saccharine Care Bears text is prettily illustrated.

Hoban, Tana. *1, 2, 3*. New York: Greenwillow Books, 1985.
ISBN 0-688-02579-X $3.95
★★ Single concept, PS

Brightly colored photographs illustrate this small, sturdy, cardboard book. The numbers one through ten are clearly represented by familiar objects: two red tennis shoes, three toy blocks, and seven animal crackers. This appealing counting book needs no text; the numeral, the word name, and the appropriate number of counters are printed in red on each page. Hoban's photographic genius continues to capture children's interest and stimulate their curiosity.

Hughes, Shirley. *When We Went to the Park*. New York: Lothrop, Lee & Shepard Books, 1985.
ISBN 0-688-04204-X $4.95
☆ Single concept, K–1

There is much to see on a walk through the park with Grandpa—anything from "one black cat" to "ten birds swooping in the sky." The illustrations complement the simple text and establish the warmth and feeling of the delightful relationship between the curious little girl and her patient grandfather. The end papers introduce the young reader to the sets of things the little girl is about to see and provide an opportunity to review and recount what she has seen.

Hutchins, Pat. *One Hunter*. New York: Greenwillow Books, 1982.
ISBN 0-688-00614-0 $12.95
ISBN 0-688-00615-9 (library binding) 12.88
★★ Single concept, PS–1

One hunter bravely stalks his game in this simple counting book. He stealthily walks past two elephants, three giraffes, four ostriches, ..., and ten parrots, totally unaware of their presence. Imagine the children's delight when the animals begin to stalk the unaware hunter. On one double-page layout, he quietly walks past a set of partially hidden giraffes while two elephants pop up behind his path. As he continues past a set of partially hidden ostriches, the three giraffes emerge from hiding. At the end of the book, the hunter shows his surprise as he turns around to encounter all the animals he has been seeking. Children will enjoy predicting each anticipated set.

Hyman, Jane. *The Gumby Book of Numbers*. New York: Doubleday, 1986.
ISBN 0-385-23455-4 $5.95
ISBN 0-385-23847-9 (library binding) 5.95
Single concept, PS–3

Fuzzy color photographs illustrate a car race involving Gumby and Pokey. The word names and numerals from one to ten, interwoven into the contrived story line, are highlighted in red type. Because of the blurred illustrations, it is difficult to count some of the sets.

Inkpen, Mike. *One Bear at Bedtime.* Boston: Little, Brown & Co., 1987.
ISBN 0-316-41889-7 $12.95
★★ Single concept, 2–6

Charming pastels set the mood for this delightful counting book. Numerals and word names from one to ten are humorously introduced as a little boy gets ready for bed. Examples include "Four giraffes who sit in the bath" and "Six snakes who unwind the toilet paper." The page introducing the "Nine caterpillars who crawl around at night" shows only one. The reader will find one caterpillar cleverly hidden on each of the previous eight pages. The final page presents another counting challenge; it shows the little boy peacefully at sleep with all the accumulated animals, including the friendly monster with ten heads.

Johnston, Tony. *Whale Song.* Illustrated by Ed Young. New York: G. P. Putnam's Sons, 1987.
ISBN 0-399-21402-X $12.95
Single concept, 1–4

The book's premise is that counting is the meaning of whale songs. The perfection established by the stunning watercolors is marred by the trivial demands on the reader to rote count one through ten. The inconsistency of this simple task against the grandeur of the whales and the poetic echoing text is confusing.

Katz, Bobbi. *Ten Little Care Bears Counting Book.* Illustrated by Bobbi Barto. New York: Random House, 1983.
ISBN 0-394-86088-8 $4.95
☆ Single concept, PS–K

Little flaps can be raised to show a hidden picture that completes the rhyme on each page. This probably detracts from what the title suggests is the major focus of the book. The unimaginative story and typically cute Care Bear illustrations allow the preschooler to count down from ten. When one flap is opened, it uncovers a bear, but it appears on the same page as the rhyme, "1 little Care Bear is not having fun! When he floats away, there will be none." *None* is incorrectly depicted as one more. The final pages have some redeeming features; they offer children the opportunity to get involved in beginning addition as they discover the ten bears in groups of one, three, three, and three.

Keller, Holly. *Ten Sleepy Sheep.* New York: Greenwillow Books, 1983.
ISBN 0-688-02306-1 $10.25
ISBN 0-688-02307-X (library binding) 10.88
Single concept, K–3

When Lewis can't sleep, his grandpa suggests that he count sheep. Ten sheep are introduced one by one, but the story line is not consistent because ordinal numbers are mixed among the cardinal numbers. Also, one picture depicts the ten sheep in bed and Lewis carrying a tray of seven glasses—the caption is "He brought each one a glass of water."

Killingback, Julia. *One, Two, Three, Go!* New York: William Morrow, 1985.

ISBN 0-688-05784-5 $6.25

☆ Single concept, PS–K

"It's bedtime," announce Mr. and Mrs. Bear, but their eight children have other ideas. On each of the two-page spreads is a parent reminder such as "wash your face and hands" and a picture of the children's current activities such as "THREE Busy Bears are splashing in their pool." Throughout the book, the children ignore their parents' requests until it is time for a snack, when they and their parents sit down to represent the number ten. The illustrations are colorful but busy.

Leman, Martin. *Ten Cats and Their Tales.* New York: Henry Holt & Co., 1982.

ISBN 0-03-062176-3 $9.95

Single concept, K–3

Beautiful paintings in luxurious colors dominate this book that differs from other counting books because the entire set is not shown. The verse that introduces six is, "Six is the cat that plays with a ball." On the page is a lush illustration of one cat. On the page that introduces eight, *two* cats are depicted in a symmetrical scene. Number here is used as a vehicle to provide order while exploring the topic of cats.

Le Sieg, Theo. *Ten Apples Up on Top.* Illustrated by Roy McKie. New York: Beginner Books, 1961.

ISBN 0-394-80019-2 $5.95
ISBN 0-394-90019-7 6.99

☆ Single concept, PS–1

Numbers up to ten are introduced when a lion, a dog, and a tiger try to outdo each other by repeatedly stacking one more apple on their own heads. There are numerous opportunities to compare the apples stacked on each animal's head by rational counting. The "seventy-five word vocabulary" beginner book provides rhyming, repetitive reading that is somewhat contrived. There are other counting books that illustrate counting more clearly and simply.

Lynn, Sara, and **Rosalinda Kightley.** *1 2 3.* Boston: Little, Brown & Co., 1986.

ISBN 0-316-54004-8
ISBN 0-316-49930-7 (paper) $6.95

☆ Single concept, PS–1

Large white numerals and an appropriate number of circular counters stand out crisply against a background of bright blue, green, yellow, or red. On the page opposite the numeral, the corresponding number of animals have been simply illustrated on a white background. The minimal text written across the bottom of the two-page spreads simply states, "six sheep," "seven ducks," "eight hens," and so on. One of the final layouts pictures the animals, numerals, and number words in descending order from ten to one. The last illustration, which shows a farm scene, challenges the reader to count each set of animals.

MacDonald, Elizabeth. *Mike's Kite.* Illustrated by Robert Kendall. New York: Orchard Books, 1990.

ISBN 0-531-05876-X
ISBN 0-531-08476-0 (library binding) $13.95

☆ Single concept, PS–2

"The wind is strong, / And the kite is too, / But it's sure to come down / If we help you," is the chant repeated throughout this counting book. As the strong wind lifts Mike's kite, he is pulled off the ground. Two gentlemen walking their dogs try to help, but soon they are pulled up by the strong wind on the kite. To introduce the numbers one to ten, the story line continues with help from three nannies pushing baby carriages, four people on horseback, ..., ten firemen. The story comes to an abrupt end as the wind stops and the accumulated group of people hanging on to the kite's string drop to the ground. The simple cartoonlike illustrations are drawn in pastels.

MacDonald, Suse, and **Bill Oakes.** *Numblers.* New York: Dial Books for Young Readers, 1988.

ISBN 0-8037-0547-6 $13.95
ISBN 0-8037-0548-4 (library binding) 13.89

☆ Single concept, PS–1

Numerals from 1 to 10 are transformed into imaginative pictures composed of stylized *numblers.* On the left page of each two-page spread, three pictures depict the gradual change of each numeral. As layers of color are added, the numeral is stretched and reshaped into a numbler. A yellow-green, bold standard numeral 2 is transformed to a graceful swan in shades of green, blue, pink, and yellow. The right-hand page shows the appropriate number of numblers in a scene. Other examples include four "4 numblers" forming a saillboat and six "6 numblers" forming a sea horse. A key to the pictures is included in the back, since some compositions are quite abstract. The young reader should be delighted with the imaginative shapes and challenged to find the numerals.

Matthias, Catherine. *Too Many Balloons.* Illustrated by Gene Sharp. Chicago: Children's Press, 1982.

ISBN 0-516-03633-5

★★★ Single concept, PS–2

Predictable text is the vehicle through which a little girl tells of her visit to the zoo. On each page she buys balloons: first one red, then two yellow, then three blue, ..., and finally ten polka-dot. She shows each purchase to a different set of animals whose number is equivalent to the number of balloons. "I bought three blue balloons. I showed my three blue balloons to the seals. They liked them." The surprise ending will delight the young reader. A word list is included at the end of this well-written book, which is one in a series of "Rookie Readers."

Miller, J. P. *Learn to Count with Little Rabbit.* New York: Random House, 1984.

ISBN 0-394-86149-3 $3.95
ISBN 0-394-96149-8 (library binding) 4.99

☆ Single concept, PS–1

Off to practice his counting, Little Rabbit walks across the countryside counting various sets of animals from one to nine. He returns to the surprise his mother had promised, ten cookies. Numerals are printed in boldface throughout the text with one large numeral in red on each page. The conversational story line and pretty illustrations offer nothing to distinguish this book from the many similar counting books available.

Moncure, Jane Belk. *Magic Monsters Count to Ten.* Illustrated by Rose-Mary Fudala. Elgin, Ill.: Child's World, 1979.

ISBN 0-89565-058-4 $7.45

☆ Single concept, PS–2

Monsters everywhere! "One was a monster who lived far away. Two was a monster who came out to play." Similar rhyming couplets are complemented with colorful illustrations of monsters one through nine. The appropriate numeral is reinforced, emblazoned on the monster's chest or as part of the monster's form. Beside each introduction is a domino shape that emphasizes the numeral on the top half and shows the appropriate number of counters on the bottom. The only other opportunities to practice the one-to-one correspondence of counting are found after monsters four and eight are introduced. It's only at those points in the evolving text that you see more than one monster at a time.

Morozumi, Atsuko. *One Gorilla*. New York: Farrar, Straus & Giroux, 1990.

ISBN 0-374-35644-0 $13.95

★★ Single concept, PS–2

Morozumi's lush illustrations were awarded the *New York Times'* Best Illustrated Children's Book Award. Each rich scene depicts a gorilla with a different number of animals from one to ten. The reader will need to carefully search to find all three budgerigars, five pandas, eight fish, and others, which are skillfully painted into detailed scenes; at times, they are partially camouflaged in their environment. Simple text introduces the one gorilla and the others in this satisfying counting book.

Morris, Ann. *Night Counting*. Illustrated by Maureen Roffey. New York: Harper & Row Publishers, 1986.

ISBN 0-694-00074-4 $3.50

☆ Single concept, PS

Two children encounter the numbers one through ten as they prepare for bed. The word name is included with the colorful illustration of each set. One inconsistency is that the number seven is illustrated by the numeral 7 on a clock rather than the appropriate number of objects.

Noll, Sally. *Off and Counting*. New York: Greenwillow Books, 1984.

ISBN 0-688-02795-4 $10.25
ISBN 0-688-02796-2 10.88

★★ Single concept, PS–1

A windup toy frog is off and counting as it jumps over each set of toys in the shop. Bright, primary colors depict the collections of toys, from one through ten, over which the frog jumps. Frog's hopping madness can be followed from one page to the next as a partial view of each toy is seen entering from the left and exiting on the right. The path of the journey encourages the young reader to follow the windup toy until the book is finished. The word name for each number is repeated across the bottom of each double-page spread. The book ends as the toy winds down to a stop after jumping over ten toy blocks.

Petty, Kate, and **Lisa Kopper.** *What's That Number?* New York: Franklin Watts, 1986.

ISBN 0-531-10176-2 (library binding) $4.90

☆ Single concept, PS–1

Numbers one through ten are explored sequentially through a young child's interesting but tiring day, beginning with Amy's finding one slipper when she gets up in the morning and ending when she counts the ten steps to be climbed to go to bed that evening. Both numerals and number names are presented. A primary value of this book could be to stimulate language activities with young children; for example, children can create their own pictures and stories of how they use numbers throughout the day. Sex-role stereotyping is present—Mom hangs out the laundry with Amy's help; mothers take the children to the park. The simple, brightly colored illustrations extend the text and provide a multicultural focus.

Pye, Sylvia E. Luckas. *Counting Animals with Jack: A 1–10 Number Picture Book.* New York: Vantage Press, 1987.

ISBN 0-533-07329-4 $4.95

☆ Single concept, no age given

Bluejays, toads, whitetail deer, ring-necked pheasants, ruffed grouse, and bobwhite quails are some of the animals Jack encounters while walking in the woods. The various groups are depicted in black-and-white drawings; at times their size is not proportional to Jack's size. Although the numbers one to ten are represented, the main focus of this book is to introduce the reader to wildlife. The book is pleasant enough, but it does not compare with the excellence of the quality counting books available on today's market.

Schade, Susan. *The Noisy Counting Book.* Illustrated by Jon Buller. New York: Random House, 1987.

ISBN 0-394-88956-8 $3.95

★★ Single concept, PS–K

Early one morning a boy goes to a pond to fish. One big frog is the first to break the early morning silence with a loud GA-DUNK. On each successive page, the noise increases in cumulative form as additional animals enter the picture—"2 ducks, WAK, WAK; and 1 big frog, GA-DUNK." The numbers increase sequentially until "6 mosquitoes, BZZZ, BZZZ, BZZZ, BZZZ, BZZZ, BZZZ; 5 crickets, CHIRP, CHIRP, CHIRP, CHIRP, CHIRP; ...; and 1 frog, GA-DUNK." Finally the young boy says, "QUIET," and all the animals flee. All is quiet until a big frog says, "GA-DUNK." The pastel drawings are colorful, complementing the mood of the simple, humorous text. One-to-one correspondence in counting is reinforced not only by the set of animals but by the sounds they make.

Serfozo, Mary. *Who Wants One?* Illustrated by Keiko Narahashi. New York: Margaret K. McElderry, 1989.

ISBN 0-689-50474-8 $12.95

☆ Single concept, PS–3

"Do you want ten? Ten speckled eggs from ten brown hens; ten pink pigs happy in their pens." With a wave of a magic wand, this vision appears when a young girl inquires, "Do you want ten?" Her younger brother stubbornly responds to each proposal, "No, I want one!" Each number is offered. Each offer is rejected. Fanciful watercolor illustrations depict more than one set to count on every page. Often the objects are shown in one-to-one correspondence, as four goats in four boats. Counting challenges appear throughout the book; in the set of ten eggs, one has broken and a baby chick is emerging; in a set of eight plates, one is shattered and another split; one scene of seven shows two adult geese and five goslings. The little boy is adamant in saying, "No, I want one." At last the reader understands, as the boy is handed *one* puppy. The end pages summarize the numerals, number names, and sets from one to ten.

Tafuri, Nancy. *Who's Counting?* New York: Greenwillow Books, 1986.

ISBN 0-688-06130-3 $11.75
ISBN 0-688-06131-1 (library binding) 11.88

☆ Single concept, PS–1

Puppy sets out to explore the environment and finds "1 squirrel, 2 birds, 3 moles, ..., and 10 puppies." The last page shows ten puppies in one-to-one correspondence with ten food dishes labeled with the numerals 1 to 10. This simple text accompanies attractive drawings of the appropriate number concept. Only numerals are introduced in the text.

Tester, Sylvia R. *One Unicorn: A Counting Book.* Illustrated by Arnoldus J. Gruter. Elgin, Ill.: Child's World, 1977.

ISBN 0-913778-78-8 $6.95

☆ Single concept, PS–3

One unicorn, two turtles, three thunderbirds, and various mythical animals introduce the numbers one through ten. The brightly colored illustrations representing each number cover a double-page spread. Each numeral appears on the left-hand side in a black-lined cameo. All the animals mentioned have their origins explained in the back of the book.

Thompson, Susan L. *One More Thing, Dad.* Illustrated by Dora Leder. Morton Grove, Ill.: Albert Whitman, 1980.

ISBN 0-8075-6095-2 $9.75

☆ Single concept, PS–1

While father is making bread, Caleb is preparing to go on a walk. Father patiently interrupts his breadmaking to meet each of Caleb's requests for one more thing to take with him until finally, to make ten things, Caleb asks his dad to go with him. Luckily, by that time, father has set the bread to rise, so he is happy to tag along with Caleb. Warm, clearly defined illustrations support the simple text. However, at no time are all ten objects countable to establish one-to-one correspondence in the counting process. The counting focus of the text appears to be a vehicle for exploring the view of a liberated househusband.

Trinca, Rod, and **Kerry Argent.** *One Woolly Wombat.* Illustrated by Kerry Argent. Brooklyn, N.Y.: Kane/Miller Book Publishers, 1985.

See Number in Other Cultures

Walt Disney Productions Staff. *Adventures with Letters and Numbers.* New York: Bantam Books, 1985.

ISBN 0-553-05533-X (paper) $5.95

☆ Single concept, no age given

Familiar Disney cartoon characters populate both sections of this book. The first section relates the letters of the alphabet to words that start with each letter. The numbers one through ten are introduced in a story format featuring Mickey and Minnie Mouse, their two nephews, and Huey, Louie, and Dewey. Their adventures furnish several opportunities for the reader to practice counting. Numerals and word names are included for each number.

Wells, Rosemary. *Max's Toys: A Counting Book.* New York: Dial Books for Young Readers, 1979.

ISBN 0-8037-6068-X $3.50

★★ Single concept, PS–K

Max and his sister Ruby are involved in a debate on toys in this little, sturdy, cardboard counting book. Max would like Ruby's doll, Emily, but Ruby announces, "Emily is 1 thing you may not have." Max considers his two toy soldiers, a house with three windows, four stuffed animals, ..., and a ten-car train and trades all of his toys for Emily. The simple colorful pictures of the two rabbits, Max and Ruby, are charming. The objects are easy to count, although more than one set is introduced on most pages.

Wildsmith, Brian. *Brian Wildsmith's 1, 2, 3's.* New York: Franklin Watts, 1973.

ISBN, none given

Single concept, K–3

Illustrations are usually meant to clarify. In this book, Wildsmith's use of brilliant color, shape, and form only confuse the mathematical objective that he attempts to explore. Numerals, number words, and their values from one to ten are presented and are followed by problem pages, where shapes are identified and children are asked to find how many. On several pages, it is difficult to determine what to count—the parts or the whole. A later reprint (1987) was not available for review.

Wood, A. J. *Animal Counting*. Illustrated by Helen Ward. Los Angeles: Price/ Stern/ Sloan Publishers, 1987.

ISBN 0-8431-1936-5 $5.95

★★ Single concept, PS–1

Unique design motivates children to continue reading in this luxuriously colored trip through the tropical jungle. Alliterative and rhyming text challenges the reader to look beneath the foliage under the folded page on the right to find the number of animals mentioned on the left. The placement of animals on one layout suggests beginning addition concepts.

Woodard, James, and **Linda Purdy.** *One to Ten and Count Again*. Illustrated by James Woodard. La Puente, Calif.: Jay Alden Publishers, 1972.

ISBN 0-914844-07-5 $6.89

☆ Single concept, PS–K

Black-and-white photographs illustrate this simple counting book. Most of the pictures depict children happily engaged in play activities; other pictures represent objects to be counted, such as baby chicks, balloons, or toys. A contrived rhyming text introduces numerals and number names, for example, "4, four, four, toys on the floor."

Yeoman, John. *Sixes and Sevens*. Illustrated by Quentin Blake. New York: Macmillan Publishing Co., 1974.

ISBN, none given OP

★★★ Single concept, PS–1

One cat, two mice, three schoolmistresses, four schoolboys, and many more join poor Barnaby on his fateful journey downriver on a raft. What promised to be a relatively uneventful trip turns into a disaster because Barnaby has to locate these unlikely and ill-matched passengers on his soon-to-be-overloaded raft. As each page is turned, the new set of passengers is introduced on the left, and on the right, the growing number of raft occupants is shown. Line, color, and detail provide humorous interpretation of the confusion that mounts with each additional load. Children can anticipate the growing pandemonium while enjoying the opportunity for practicing their counting skills from one through ten.

Chants, Songs, and Rhymes

Traditional songs and rhymes have withstood the test of time. Their rhythm and the predictability and repetition of their action and rhyme have made them favorites of children through the ages. These very characteristics make them a suitable resource for combining beginning reading and mathematics experiences. As children sing along with the countdown of Gerstein's version of *Roll Over,* they use the predictability to help them track print. Different translations of familiar rhymes are found in this section, as well as new rhymes and poems.

Barnes-Murphy, Rowan. *One, Two, Buckle My Shoe: A Book of Counting Rhymes.* New York: Little Simon, 1988.

ISBN 0-671-63791-6 $10.95

★★ Single concept, PS–3

Lively full-color illustrations depict the humorous antics of a variety of merry little animals featured in a collection of favorite counting rhymes. This colorful counting book should be shared by an adult and a child, since opportunities exist for counting animals as well as enjoying the rhyme that describes them and their unlikely actions.

Brett, Jan. *The Twelve Days of Christmas.* New York: Dodd, Mead & Co., 1986.

ISBN 0-396-08821-X $12.95

☆ Single concept, all ages

Brett's intricately illustrated scenes with elaborate borders dramatically and beautifully portray the action and content of this traditional Christmas carol. As each consecutive verse is introduced, the new gift is shown in rich colors and detailed design. Six geese a-laying are shown in fanciful headdresses and vests, and another opportunity to count to six is in the top border, which shows six Christmas ornaments in the shape of geese hanging from a

Christmas tree. Each double-page spread has side panels illustrating a family preparing for the holidays. The family scenes reflect traditions from different nationalities and include greetings in different languages.

Christelow, Eileen. *Five Little Monkeys Jumping on the Bed.* New York: Clarion Books, 1989.

ISBN 0-89919-769-8 $13.95

☆ Single concept, no age given

"One fell off and bumped his head. The mama called the doctor...." This familiar chant illustrated in pastels should delight young readers. The repetitive chant and humorous scenes show the monkey siblings jumping on the bed, the inevitable falls, the calls to the doctor, and the mama monkey caring for a crying little monkey and repeating the doctor's advice. The final pages show all five little monkeys safely tucked in bed and mama monkey retiring to her room to jump on the bed! The story line also introduces beginning subtraction concepts as one by one, the number of monkeys jumping on the bed diminishes.

_____. *Five Little Monkeys Sitting in a Tree.* New York: Clarion Books, 1991.

ISBN 0-395-54434-3 $13.95

☆ Single concept, PS–K

This format and pastel illustrations are similar to *Five Little Monkeys Jumping on the Bed;* a repetive chant and humerous scenes show the five monkey siblings disappearing one by one. The monkeys are sitting in a tree and teasing Mr. Crocodile by daring him, "Can't catch me!" Each challenge is followed by a snap from Mr. Crocodile's jaws, and one fewer monkey is in the next scene. The monkey's mama and other spectators look on with dismay, but in the final scenes, they find all five monkey siblings hiding in the tree. This story line offers a simple introduction to the concept of subtraction.

Dunrea, Olivier. *Deep Down Underground.* New York: Macmillan Publishing Co., 1989.

ISBN 0-02-732861-9 $13.95

☆ Single concept, PS–2

"4 furry caterpillars scooch and scrunch when they hear; 3 big black beetles scurry and scamper when they hear; 2 pink earthworms wriggle and wrangle when they hear; 1 wee moudiewort digging and digging, deep down underground." From one through ten, accumulating sets of underground animals in their habitats are effectively illustrated by pen and ink with watercolor. Alliterative text introduces each new group and repeats the refrains from the previous pages. The young reader should delight in the text as well as in finding and re-counting the previously named underground creatures.

Gerstein, Mordicai. *Roll Over!* New York: Crown Publishers, 1984.
ISBN 0-517-55209-4 $8.95

★★★ Single concept, PS–1

This beautifully illustrated counting book uses fold-out flaps to reveal the consequences of rolling over in a crowded bed with ten inhabitants. Readers can soon predict the outcome of the small boy's command, "Roll over," but the uniqueness of each animal who falls out of bed still provides an element of surprise. Repetition makes this book easy for beginning readers; the book also depicts subtraction as counting back by showing one fewer in the bed. Even the passage of time is implied by the ever-changing view through the night window.

Gray, Catherine. *One, Two, Three, and Four—No More?* Illustrated by Marissa Moss. Boston: Houghton Mifflin Co., 1988.
ISBN 0-395-48293-3 $13.95

Multiconcept, K–3

Twenty-two stilted rhymes introduce the concepts of numbers, pairs, addition, and subtraction in situations involving numbers from one to four. One or more humorous pastel cartoons of animals accompany each rhyme. The illustrations imply the action of the situation as two tiger-striped socks disappear off the clotheslines that originally depicted four. The answer for each number combination is given in the verse and can be verified by the reader by interpreting the illustrations.

Haley, Gail. *One, Two, Buckle My Shoe: A Book Of Counting Rhymes.* New York: Doubleday, 1964.
ISBN, none given OP $10.95

☆ Single concept, no age given

From the most traditional counting rhymes, like the one in the title, to some interesting new ones, like "Three young rats with black felt hats" and "One old Oxford Ox opening oysters," this text does little to expand the concept of number. The rhymes offer a variety of enjoyable repetitive refrains. The illustrations—some brightly colored and others in black, brown, and grey—offer opportunities for adult and child readers to confirm the presence of the correct number of articles featured in the rhyme. The numerals in the rhymes are written in large size and bright colors.

Koontz, Robin Michal. *This Old Man, the Counting Song.* New York: Dodd, Mead & Co., 1988.
ISBN 0-396-09120-2 $12.95

★★ Single concept, no age given

This wonderful book, based on the traditional English counting song, will be well received because of its spritely pictures, music, and play action. On one page of each double-page spread is the catchy verse, the numeral in bold colors, and the appropriate number of gnomes clambering over it. On the opposite pages are humorous illustrations of a little girl and her dog encountering the gnomes wreaking havoc in her bedroom and across the farm on which she lives.

Langstaff, John. *Over in the Meadow.* Illustrated by Feodor Rojankovsky. New York: Harcourt, Brace & World, 1957.
ISBN 0-15-258854-X $14.95

☆ Single concept, K–3

Colorful pastels alternate with soft brown drawings to capture nature's creatures in the beautiful meadow. Each rich scene shows a mother and her young in their natural habitat, from old mother turtle and her little turtle to mother rabbit and her ten bunnies. Discrimination of which objects to count will challenge the young reader in some scenes. The book closes with the text and the music for the song "Over in the Meadow."

Mack, Stan. *Ten Bears in My Bed.* New York: Random House, 1974.
ISBN 0-394-92902-0 (library binding) $10.99

☆ Single concept, PS–1

Based on the familiar count-down rhyme, Mack's adaptation is imaginative and comical. In response to the demand to roll over, each bear chooses to leave in a different way; one flies out, one gallops out, one skates out, one roars out, ..., until the last one rumbles out. The illustrations are lively and humorous and are totally supportive of the actions described in the text. The one-by-one decreasing size of the set lends itself to "one less than" and beginning subtraction concepts. Although this is a good book, other, better, adaptations are available.

Oechsli, Kelly. *Too Many Monkeys: A Counting Rhyme.* New York: Golden Press, 1980.
ISBN 0-307-11984-X $1.95
ISBN 0-307-61984-2 (library binding)

☆ Single concept, PS

Monkeys gather in groups of one to ten to participate in hilarious slapstick antics described in rhyming text and action-packed illustrations. The rhyme itself and the careful placement of the text allow the reader to predict the anticipated number. "Ten little monkeys, sitting down to dine! One monkey leaves them. Now there are ___ ?" As subsequent monkeys depart, the reader begins to count back until the end of the book when the concept *none* is introduced.

The illustrations emphasize through the placement of the monkeys the ideas of "one more than" and "one less than."

O'Donnell, Elizabeth Lee, and **Karen Lee Schmidt.** *The Twelve Days of Summer.* Illustrated by Karen Lee Schmidt. New York: Morrow Junior Books, 1991.

ISBN 0-688-08202-5		$13.95
ISBN 0-688-08203-3	(library binding)	13.88

☆ Single concept, PS–3

One hardly expects that while looking at sandy scenes beside the sea, the "Twelve Days of Christmas" melody would be running through one's head. But from the opening line, "On the first day of summer, / I saw down by the sea / A little purple sea anemone," to the final line, one hears the familiar melody. "Eight crabs a-scuttling, / Seven starfish strutting, / Six squid a-swimming," are some of the creatures that a little girl encounters on her explorations on twelve summer days. Each scene becomes more and more crowded as the creatures accumulate; the reader's challenge is to count each new set as well as to find and count the previously introduced sets. Charming illustrations in watercolors complement the verse.

Peek, Merle. *Roll Over!* New York: Clarion Books, 1981.

ISBN 0-395-29438-X	$13.95

☆ Single concept, PS–2

Nine animals, including a raccoon, a parrot, a bear, and a snake, are crowded into bed with a little boy in the opening dream scene. As the familiar rhyme proceeds, the animals fall from the bed one by one. Each scene shows all ten inhabitants; some have found a new spot to sleep, and the remaining are still in or near the bed. On each double page the "and one fell out" is clearly shown with one fewer character in the bed. Varying shades of blue and orange are effectively used to illustrate the dreamlike atmosphere.

Raffi. *Five Little Ducks.* Illustrated by Jose Aruego and Ariane Dewey. New York: Crown Publishers, 1989.

ISBN 0-517-56945-0	$9.95

★★ Single concept, PS–1

This beautifully illustrated picture book is a Raffi song adapted to print. Brightly colored drawings show a mother duck who seeks her ducklings as, one by one, they disappear. The "one less than" concept is a beginning look at the take-away model for subtraction. The young reader can use rational counting to verify the results. A happy ending occurs after Mother Duck searches for her young through the changing seasons. All five ducklings return as adults; the pictures show them with their mates and families, which range in size from one to five little ducks. Using the Raffi song from which the book was derived could add to the book's potential.

Rees, Mary. *Ten in a Bed.* Boston: Little, Brown & Co., 1988.
ISBN 0-316-73708-9 $12.95

★★ Single concept, PS–1

What a slumber party! Charming pastels illustrate this unique and humorous adaptation of the familiar counting rhyme "Ten in a Bed." The opening page shows ten little children crowded in a bed, and then the traditional rhyme begins. One by one the children fall out of bed. The details of the illustrations on the opposing pages show one more child joining the other wakened children who are involved in different activities around the house. These pages allow the reader to count the children who have been forced from the bed. This book introduces beginning addition and subtraction situations because the number in bed is constantly being decreased by one and the children humorously depicted on the opposite pages are always being joined by one more.

Samton, Sheila White. *The World from My Window: A Counting Poem.* New York: Crown Publishers, 1985.

ISBN 0-517-55645-6 $9.95

☆ Single concept, PS–1

"The moon is rising in the sky, and two pale clouds are drifting by." The opening lines of this counting poem set the stage with dreamlike illustrations and rhyming text exploring the number concepts one through ten as they are represented in "the world from my window." Bold colors and interesting silhouettes combine to form attractive murallike illustrations. The numeral and word name for each set are simply stated under each illustration.

Underhill, Liz. *1, 2, Tie Up My Shoe.* New York: Stewart, Tabori & Chang Publishers, 1990.

ISBN 1-55670-142-X

☆ Single concept, no age given

Rote counting from one to thirty is presented through rhyming text. A pair of numerals and its accompanying verse are artfully presented on the left-hand page; the opposite pages are intricate, fascinating, ornate illustrations. The scenes do not contain objects to count; they simply illustrate the verse. For example, opposite the verse "11, 12 Pots to Shelve" is a humorous scene of four elephants building clay pots in a crowded studio. The outstanding illustrations make this book a joy to read.

Wadsworth, Olive A. *Over in the Meadow: A Counting-Out Rhyme.* Illustrated by Mary Maki Rae. New York: Viking Kestrel, 1986.

ISBN 0-670-53276-2 $10.95

★★ Single concept, PS–K

Rich splashes of color in the earth tones of greens, blues, browns, and golds illustrate this traditional counting rhyme. A different animal mother is featured with an appropriately sized brood of little ones to illustrate the number concept on each double-page spread. Young readers will enjoy anticipating the actions and the rhyme of this charming story. The number word names alone are used in the text of the story, but the numerals are used in a haphazard way on the end papers for decoration only.

West, Colin. *One Little Elephant*. Chicago: Children's Press, 1987.
ISBN 0-8120-5885-2 $8.95
☆ Single concept, PS–2

Multicolored elephants, one after another, are added in amusing situations until there are ten altogether. The rhyming text anticipates each new elephant; for example, "Eight little elephants / Skipping in a line, / Once there were eight elephants, / And then there were...." The appropriate numeral is printed on each page as each new elephant appears in the clear, colorful drawings. West shows his creativity with a humorous ending and a second chance to count up to ten.

_____. *Ten Little Crocodiles*. Chicago: Children's Press, 1987.
ISBN 0-8120-5884-4 $8.95
☆ Single concept, PS–2

Ten whimsically drawn crocodiles disappear one at a time in a variety of ways. The last, lonely crocodile is surprised at the conclusion to find that the other nine are safe and sound as they are all reunited. A final numeral countdown from 10 to 1 is given on the last double page. Comical, colorful, and bright illustrations accompany a rhyming text. This is a companion book to *One Little Elephant*. West's humorous rhyming text and colorful, action-packed illustrations may become familiar favorites for young readers.

Number in Other Cultures

A major portion of this category is the Count Your Way series. Each book uses number as a vehicle for exploring another country and its culture. This series offers opportunities for integrating mathematics and social studies. Other books in this category, Feelings's *Moja Means One,* Trinca and Argent's *One Woolly Wombat,* and Zaslavsky's *Count on Your Fingers African Style,* provide a more useful balance between the two subjects.

Dee, Ruby. *Two Ways to Count to Ten.* Illustrated by Susan Meddaugh. New York: Henry Holt & Co., 1988.

ISBN 0-8050-0407-6	$12.95

★★ Single concept, K–3

In this retelling of a traditional Liberian folktale, King Leopard decides to hold a contest to find his successor. He challenges all the beasts in the jungle to throw a spear so high that they can count to ten before it lands. One after another the animals try and fail, until a clever young antelope uses a different way to count to ten—counting by twos. The expressive illustrations complement the mood and the actions of the characters as the story unfolds. Rote counting up to nine is repeated throughout the book. The real mathematical strength lies in using this story as an introduction to exploring other ways to count. The book's main strength is the introduction of folklore from other cultures.

Feelings, Muriel. *Moja Means One: A Swahili Counting Book.* Illustrated by Tom Feelings. New York: Dial Books for Young Readers, 1971.

ISBN 0-8037-5777-8	$11.89
ISBN 0-8037-5711-5 (paper)	3.95

★★★ Single concept, PS–3

This beautifully illustrated book successfully reinforces counting skills by furnishing opportunities to count objects, one through ten. The memorable illustrations introduce the reader to the uniqueness of an East African people and the area in which they live. Swahili names for the numbers through ten are presented in the text. The serenity of the landscape and the dignity of the people are emphasized in the soft gray charcoal drawings.

Grossman, Virginia, and **Sylvia Long.** *Ten Little Rabbits.* San Francisco: Chronicle Books, 1991.

ISBN 0-87701-552-X $12.95

★★ Single concept, PS–2

Beautiful pastel illustrations depict the environment, lifestyles, and traditions of ten different Native American cultures through the activities of rabbits dressed in native costumes. On the desert soil with an adobe home in the background, two rabbits, dressed as graceful Hopi dancers, ask for rain. On a barren, snow-covered plain under a starry sky, five rabbits, wrapped in Indian blankets and huddled around a fire, are depicted as five wise storytellers. On a final double page, each culture—Sioux, Tewa, Ute, Menominee, Blackfoot, Hopi, Arapaho, Nez Perce, Kwakiuti, and Navajo—is introduced and linked to the appropriate illustration as the numerals 1 to 10 appear. An illustration of a typical design for an Indian rug appears beside a brief description of each culture. This is a well-designed counting book whose simple text and charming illustrations combine to provide a fine balance between the introduction of Native American cultures and the opportunity to explore counting. Children should find this book appealing.

Haskins, Jim. *Count Your Way through Africa.* Illustrated by Barbara Knutson. Minneapolis, Minn.: Carolrhoda Books, 1989.

ISBN 0-87614-347-8

☆ Single concept, 1–4 $4.95

All the books in the Count Your Way through... series have a common format. Colorful illustrations enhance the texts, which integrate history, geography, and number. The numbers one through ten are introduced with the respective country's corresponding symbol and its pronunciation. Each number is related to information about the culture, geography, and history of that country, which could motivate the reader to further research on the country. An explanation of the history of the country's language and alphabet is included in the introductory notes. The main purpose of these books is to introduce the reader to other cultures. This series should not be viewed as a way to develop counting or other number concepts; the development of counting and number concepts is a secondary purpose of each book. Often the number of objects that could be counted is not directly related to the text, or there are no objects to count.

In *Count Your Way through Africa,* Swahili, one of 800 different languages in Africa, is the language used to count from one to ten.

The informative text is softly complemented by the brown-toned watercolor illustrations.

_____. *Count Your Way through Canada.* Illustrated by Steve Michaels. Minneapolis, Minn.: Carolrhoda Books, 1989.

ISBN 0-87614-350-8

☆ Single concept, 1–4 $4.95

French, the official language of the Canadian province of Quebec, is highlighted in writing the number words from one to ten. The number two is used to introduce the fact that there are two official languages in Canada. As in the other books in this series, number concepts are interwoven into the otherwise informative text in a contrived fashion; for example, a traditional Inuit winter costume has eight pieces of clothing—that is, if one counts each mitten and boot separately. Canadian geography, history, and culture facts are related throughout the text and complemented with satisfactory artwork. See the annotation for *Count Your Way through Africa* for an overview of this series.

_____. *Count Your Way through China.* Illustrated by Dennis Hockerman. Minneapolis, Minn.: Carolrhoda Books, 1987.

ISBN 0-87614-302-8 (library binding) $4.95
ISBN 0-87614-486-5 (paper)

☆ Single concept, 1–6

Count Your Way through China explores the fact that written Chinese has no alphabet but uses individual characters to stand for syllables or whole words. The author shows how to write and pronounce the numbers one through ten in Chinese. Each number is then used as a vehicle to explore Chinese history, geography, and life style. Often the examples for the numbers are forced; for the example "Three Chinese *li* equal a mile," the illustration shows three people walking along the Great Wall. Rich watercolor illustrations enhance the text. See the annotation for *Count Your Way through Africa* for an overview of this series.

_____. *Count Your Way through Japan.* Illustrated by Martin Skoro. Minneapolis, Minn.: Carolrhoda Books, 1987.

ISBN 0-87614-301-X (library binding) $4.95
ISBN 0-87614-485-7 (paper)

☆ Single concept, 1–6

After an introductory note about the history of the Japanese numbers and how some numbers are Chinese derivations, the book relates each number to information about the culture, geography, and history of Japan. Counting tasks, as in other books in this series, are often contrived and are of secondary value. The format of using numbers to tell about a country is unique and interesting, but the value of the book lies in the exploration of another culture, not in the mathematics. Inconsistent examples of number include a discussion on the new responsibilities and privileges that children acquire when they reach the age of ten, but the picture shows ten children. Another example tells of the six major sumo tournaments but depicts six wrestlers. The delicate watercolor illustrations support the author's intent to initiate a better understanding of Japan, its people, and its culture. See the annotation for *Count Your Way through Africa* for an overview of this series.

_____. *Count Your Way through Korea*. Illustrated by Dennis Hockerman. Minneapolis, Minn.: Carolrhoda Books, 1989.

ISBN 0-87614-348-6

☆ Single concept, 1–4 $4.95

Sino-Korean numbers are used to count minutes and money, but Korean numbers, which are used to count people and things, are the ones introduced in this book. Attractive, vibrant illustrations and an informative text highlight facts about Korea including one famous astronomical observatory, a pagoda five stories high, and ten vowels in the Korean alphabet. See the annotation for *Count Your Way through Africa* for an overview of this series.

_____. *Count Your Way through Mexico*. Illustrated by Helen Byers. Minneapolis, Minn.: Carolrhoda Books, 1989.

ISBN 0-87614-349-4

☆ Single concept, 1–4 $4.95

Mexico, one country in North America, is featured in this book from the Count Your Way through... series. The number words from one to ten are written in Spanish, the official language of Mexico. Traditions and history from Indian and Spanish cultures are interestingly woven through the text. Beautiful pastel illustrations clearly depict the ideas presented. See the annotation for *Count Your Way through Africa* for an overview of this series.

_____. *Count Your Way through Russia*. Illustrated by Vera Mednikov. Minneapolis, Minn.: Carolrhoda Books, 1987.

ISBN 0-87614-303-6 (library binding) $4.95
ISBN 0-87614-488-1 (paper)

☆ Single concept, 1–6

Each number from one through ten is used to relate information about Russian history, geography, or traditions. The reader is shown how to pronounce the numbers written in the Cyrillic alphabet of the Russian language and how to write the numbers using Arabic numerals. Examples such as it takes four days to go halfway across the Soviet Union on the Trans-Siberian train to represent 4 are contrived; others such as the seven nesting dolls called Matryoshka to represent 7 are most appropriate. This book could leave the reader wanting to do more research on the country. See the annotation for *Count Your Way through Africa* for an overview of this series.

_____. *Count Your Way through the Arab World.* Illustrated by Dana Gustafson. Minneapolis, Minn.: Carolrhoda Books, 1987.

ISBN 0-87614-304-4 (library binding) $4.95
ISBN 0-87614-487-3 (paper)

☆ Single concept, 1–6

Travel through the Arab world and learn about its culture, religion, and geography. Numbers one through ten are used in the informative text and complementary illustrations. The reader can learn how to pronounce the numbers in the Egyptian dialect and how to write the numbers using the Arabic symbols. The book integrates number with the history and geography of the Arab world. See the annotation for *Count Your Way through Africa* for an overview of this series.

Trinca, Rod, and **Kerry Argent.** *One Woolly Wombat.* Illustrated by Kerry Argent. Brooklyn, N.Y.: Kane/Miller Book Publishers, 1985.

ISBN 0-916291-00-6 $11.95

★★★ Single concept, K–2

One woolly wombat, two cuddly koalas, three warbling magpies, and four thumping kangaroos are some of the Australian animals populating this delightful counting book, which includes numbers from one to fourteen. A phrase such as "five pesky platypuses splashing with their feet" introduces each double-page spread. The scene that includes a platypus in an inner tube is humorously depicted on the opposite page in beautiful illustrations. The next double page continues in rhyming text such as "six cheeky possums looking for a treat." By clever design throughout the book, the scenes appear three-dimensional with the animals ready to burst forth from the page.

Zaslavsky, Claudia. *Count on Your Fingers African Style.* Illustrated by Jerry Pinkney. New York: Thomas Y. Crowell Publishers, 1980.

ISBN 0-690-03864-X
ISBN 0-690-03865-8 (library binding)

★★★ Multiconcept, 1–3

Lively scenes of the bustling African marketplace are the setting for this exploration of how various African cultures use finger counting. The beautiful black-and-white drawings depict the various marketplace scenes with reality and expression. One-to-one correspondence and the concept of number are presented in a very interesting and informative way. African number names are also given. Several invitations to try some of the customs are offered to the reader with a special challenge at the end of the book to create a new set of number signs and number words.

_____. *Tic Tac Toe.* Illustrated by Anthony Kramer. New York: Thomas Y. Crowell Publishers, 1982.

See Reasoning—Classification, Logic, and Strategy Games.

Counting—Zero

Zero is a unique number that needs a special introduction. Children develop the concept of no objects in a set after they develop the concept of how many in a set using only the natural numbers. The counting books in this category introduce the concept of zero: the numeral, the word name, and empty sets.

Anno, Mitsumasa. *Anno's Counting Book.* New York: Thomas Y. Crowell Publishers, 1977.

ISBN 0-690-01287-X	$13.70
ISBN 0-690-01288-8	13.89

★★★ Multiconcept, PS–3

Beautiful watercolor landscapes show the changing seasons through the twelve months of the year and the activities of the people and animals who live there. The wordless picture book depicts the numbers zero through twelve. Each double page provides a number of sets for the reader to find and to count, such as six buildings, six geese, six children, six adults, six evergreens, and six deciduous trees, and introduces the numeral. As the items in the illustrations change in number, a growing tower of cubes illustrates zero to ten. A second tower of cubes is used to illustrate eleven and twelve as ten and one and ten and two, respectively. This illustration provides a simple introduction to place-value concepts. A section at the conclusion of the book is meant to assist teachers or parents in explaining the concepts illustrated in the text.

Aylesworth, Jim. *One Crow: A Counting Rhyme.* Illustrated by Ruth Young. New York: J. B. Lippincott Co., 1988.

ISBN 0-397-32174-0	$12.95
ISBN 0-397-32175-9 (library binding)	

★★ Multiconcept, PS–1

The sun is rising as another busy summer day on the farm begins. This beautifully illustrated counting book features barnyard animals

45

in sets from zero through ten with corresponding numerals. Each easy-to-count set of animals is introduced through rhyming verse. From sunrise to sunset, the day is filled with sets of animals actively involved with their daily routines in their natural surroundings. Then summer turns to winter, and the barnyard is transformed into a cold and snowy world by a blanket of white snow. The numbers zero through ten are revisited, and the rhymes reflect the seasonal change experienced by each set of barnyard animals in their winter wonderland. This is a good book for reading and discussing with children as they compare the changes between the two sections of the book.

Gould, Ellen. *The Blue Number Counting Book.* Illustrated by Cathy Kelly. Washington, D.C.: Learning Tools, 1983.

ISBN 0-938017-01-2 (paper) $6.00

★★ Single concept, PS–2

Numbers from zero to ten are presented as felt numerals and felt cutouts of objects to appeal to the child's sense of touch. The only color used in the predominantly black-and-white drawings is blue, and both the numerals and the appropriate number of objects are shown in blue felt. This is a unique opportunity for the child to feel the numeral and the object while counting and saying the name for the number.

Kramer, Anthony Penta. *Numbers on Parade 0 to 10.* New York: Lothrop, Lee & Shepard Books, 1987.

ISBN 0-688-05554-0 $10.25
ISBN 0-688-05555-9 10.88

☆ Single concept, PS–1

Alliterative text describes the characters in a brightly colored circus parade, challenging the reader to count sets of animals and entertainers from zero through ten. Inexperienced counters may be confused at times because the items in the sets are frequently shown in overlapping positions across a two-page spread and interacting with a monkey mascot who appears with all sets. It is essential to the book's success that the reader realize that the monkey is *not* to be counted. Also misleading is the way in which zero is illustrated by having the monkey appear on the pages holding his paws in the shape of a zero. An appealing five-page folding panel at the end of the book shows the entire circus parade. This provides a particular challenge to the more advanced readers, since they have to remember which animals and characters belong to which sets.

McDonnell, Janet. *Polka-Dot Puppy's New House.* Illustrated by Linda Hohag and Lori Jacobson. Elgin, Ill.: Child's World, 1988.

ISBN 0-89565-380-X $8.25

☆ Single concept, PS–2

How many windows should Polka-Dot Puppy have in his new house? Each set of animal friends has a suggestion to offer and a reason for suggesting it. They snub the suggestion of each previous set and vote for one more window. When two turtles suggest two windows, "Only two windows in the house?" chirp three thrushes. "But you will need at least three." Finally, the animals, from two turtles to ten turkeys, all gather to listen to the final verdict. Polka-Dot Puppy announces his decision to have zero windows. Appropriate numerals are included in the pretty, delicate illustrations, and the number words are used throughout the text. The pages where the numerals appear contain opportunities to count several sets of appropriate items. On the page for six, there are six snakes, six chairs, six vases, six flowers, six windows, six mats, and six panes of glass in each window.

Winik, J. T. *Fun with Numbers.* Milwaukee, Wis.: Penworthy, 1986.
ISBN 0-87617-029-7 $10.39

★★ Single concept, PS–1

Children of varied races are involved in playful activities, with each new activity attracting another child. The book offers its readers the opportunity to count the children and to identify the representative numerals. The appropriate large numeral and the written number word are included on each page. At the end of the book when all the children leave for lunch, the empty tire swing represents a big zero. There is one example where ordinal concepts are presented and written as numerals. The illustrations are bold and inviting, with no distractions.

Counting—Large Numbers

Counting numbers larger than ten soon becomes a challenge for kindergarten children. They love to practice a newly learned skill, and many of these books will give the opportunity to do just that. As in the simpler counting books, the variety of forms in which the challenge is offered is limitless. Whether embedded in fascinating story, contained within a listing of items, or captured in the magic of a catchy rhyme, the challenge is there.

Some of these books introduce each consecutive counting number, as Bruna's books consecutively represent one to twelve and thirteen to twenty-four. Others introduce decade numbers after introducing the numbers from one to ten. When decade numbers are introduced, the sets may not be arranged in groups of ten. In Demi's *Count the Animals* or Fowler's *Mr. Little's Noisy 1, 2, 3,* the child may be encouraged to count by fives because of the pattern of the numerals or the arrangement of the sets. Some of the books simply serve as a vehicle to estimate larger numbers, as in Peppe's *Circus Numbers* when the children are asked, "How many people?" Questions motivating children to estimate will help the readers develop number sense. Illustrations depicting the relative size of numbers, like those in Conran's *My First 1, 2, 3 Book,* should also enhance the reader's number sense.

Brenner, Barbara. *Snow Parade.* Illustrated by Mary Tara O'Keefe. New York: Crown Publishers, 1984.

ISBN 0-517-55210-8 $8.95

☆ Single concept, PS–1

Muted tones of gray, black, blue, and red compose the soft drawings that illustrate this story about Andrew's snow parade.

Alone, Andrew sets off in the winter landscape to form a parade. Soon he is joined by a dog, making a parade of 2; the parade's numbers gradually grow to 10 as they are joined by a duck, a rabbit, a pigeon, and others. The final scenes encourage the reader to consider larger numbers when it is suggested that the parade could be expanded to numbers of 20, 50, 100, 500, and more.

Brown, Marc. *One Two Three: An Animal Counting Book.* Boston: Little, Brown & Co., 1976.

ISBN 0-316-11064-7 $12.45

★★ Single concept, PS–3

Number values from one through twenty are presented through groupings of uniquely illustrated animals. The color, clarity, and design features of the illustrations elevate this counting book to a higher plane than many others of its kind. Each number value represented through the groupings of animals in motion is reinforced by the presence of its symbol and name. The appropriate number symbol is incorporated into the design of each page, that is, 4s compose the alligator's teeth and define and emphasize the texture of the alligator's skin on the page representing four.

Bruna, Dick. *I Can Count.* Los Angeles: Price/Stern/Sloan Publishers, 1984.

ISBN 0-8431-1577-7 $2.95

★★ Single concept, PS

Numerals and objects from one to twelve are featured in this counting book. On the left-hand page of each double spread is printed a large black numeral. Bold primary colors dominate the opposite page where the objects to be counted are clearly, simply, and effectively illustrated. A good example of a well-designed, beginning counting book.

_____. *I Can Count More.* Los Angeles: Price/Stern/Sloan Publishers, 1984.

ISBN 0-8431-1578-5 $2.95

★★ Single concept, PS

Numbers from thirteen to twenty-four are the focus in this sequel to *I Can Count.* See the annotation above for a description of the book's format. Some of the objects have been arranged in sets or arrays for ease in counting. Five clusters of three flowers illustrate fifteen; three columns of six tiles represent eighteen. Three rows of six eggcups with all but one containing an egg cleverly illustrate seventeen as one less than eighteen.

Campana, Manny. *The Saggy Baggy Elephant's Great Big Counting Book.* New York: Golden Press, 1983.

ISBN 0-307-10442-7 $3.50
ISBN 0-307-60442-X (library binding)

☆ Single concept, PS

Sooki, the Saggy Baggy Elephant, dances her way through the jungle on the way to an elephant dance where twelve elephants are dancing. On her way she sees "one lazy hippopotamus floating in the cool water, two great big crocodiles sunning on the shore," and so on. Although the illustrations are colorful, neither they nor the uninteresting story line are apt to keep children's attention for long.

Conran, Sebastion. *My First 1, 2, 3 Book.* New York: Aladdin Books, 1988.

ISBN 0-689-71267-7 $7.95

★★ Multiconcept, PS–1

Brightly colored double-page spreads illustrate the numbers 1 through 20. A minimal text complements the design: "three cats … prowling," or "ten soldiers … at attention." A panel on the right-hand page highlights the numeral and an appropriate number of marble counters. The counters are arranged in arrays or partial arrays for ease in counting. Since the counters for 4 through 10 are arranged in columns of 2, the arrangement clearly depicts odd and even numbers. At 20 the counting pattern changes, and the numbers 30, 40, 50, 60, 100, 1000, and 1 000 000 are depicted. To accommodate the larger numbers, the counters in the border are smaller for the multiples of 10 and increasingly smaller for 100, 1000, and 1 000 000. The final scenes are obviously uncountable but simply illustrate the largeness of the numbers.

Curry, Peter. *One, Two, Three.* Los Angeles: Price/Stern/Sloan Publishers, 1983.

ISBN 0-8431-0783-9 $3.95

☆ Single concept, PS–2

Simple, brightly colored drawings illustrate this rhyming text describing the numbers one through twenty. For the numbers one to ten, one page shows the numeral, the word name, and the appropriate number of counters. The counters are goldfish with each added counter a unique drawing. On the opposite page is a representation of the number in a new situation with a short caption. Some of the examples are challenging to count, such as thirteen steps in a staircase and eighteen toadstools arranged in a circle.

Demi. *Demi's Count the Animals 1-2-3.* New York: Grossett & Dunlap, 1986.

ISBN 0-448-18980-1 $9.95

★★★ Single concept, PS-2

At the book's beginning, a menagerie of colorful animals are labeled with appropriate numerals and arranged in rows of five. Across the bottom of this page is the accumulated count by fives with every other number in the sequence highlighted—5, **10**, 15, **20**, 25…. One of the final pages includes a spiral of animals without numerals to be counted in sets of two. This is just a taste of the busy, bright, animated scenes that unfold as each double page encourages the child to count the charming, intricately designed animals that dash across it. The rhythmic, rhyming text introduces some exciting new animals in the journey from one to twenty. Each rhyme is preceded on the page by the bold-faced numeral and number word that will be featured there. Several opportunities to count different sets are offered. A few examples depict sets as ten and some more; thirteen, for example, is clearly illustrated as ten and three more.

Dunn, Phoebe, and **Vincent B. Lee.** *How Many?* New York: Random House, 1988.

ISBN 0-394-89388-3 $4.95

★★ Single concept, PS

Clear, colorful photographs show sets of familiar items: four candles on a birthday cake, five goldfish, six toy cars, seven white fluffy bunnies, and a child's ten toes. The familiarity of each set should delight and appeal to the young reader. Each cardboard page is cut in half with the photographs and a brief caption on the lower pages and large bold numerals on the upper pages. As the pages are turned, children can match the numerals from 1 to 15 with the appropriate set.

Eichenberg, Fritz. *Dancing in the Moon: Counting Rhymes.* New York: Harcourt Brace Jovanovich, 1983.

ISBN 0-15-221443-7 $12.95
ISBN 0-15-623811-X (paper) 1.85

★★ Single concept, K–3

Originally published in 1955, this delightful counting book continues to appeal to the reader. The numbers from one to twenty are introduced in rhymes; "4 pandas resting on verandas, 5 dragons pulling wagons." Eichenberg's clever illustrations and choice of rhyming words add humor to the counting. The detailed pastel drawings should enhance the reader's interest.

Fowler, Richard. *Mr. Little's Noisy 1, 2, 3.* New York: Grosset & Dunlap, 1987.

ISBN 0-448-19202-0 (paper) $5.95

☆ Single concept, K–3

An ordinary little book leads us from 1 to 20, then by tens to 100, as a restless sleeper dreams. He tosses and tumbles in a fitful sleep on a little bed at the foot of each page as his dreams are reflected in large "thought bubbles" above him. Whirring, barking, banging, tapping, and buzzing are just a few of the sounds he hears in his sleep as the appropriate number of robots, dogs, carpenters, woodpeckers, and finally, 100 bees invade his dreams. But it isn't until one alarm clock rings that the noise is enough to wake him. A large bold numeral and the number word appears on each page. Some of the larger sets are arranged in clusters of five for ease in counting. One point of confusion appears when not all the characters in the dream appear to be making the noise indicated. Then which set is the reader to count? For example, the text indicates there are eight dogs barking. In the dream, only six appear to be doing so.

Kilroy, Sally. *The Baron's Hunting Party.* New York: Viking Kestrel, 1987.

ISBN 0-670-81313-3 $9.95

★★ Single concept, PS–1

Numbers one through twenty are introduced through the counting opportunities provided by Baron Bertie and his hunting party. The Baron and seven friends saddle up eight horses to go on a hunting expedition where they see nine geese and ten rabbits. The women are at home embroidering thirteen boars' heads, fourteen deer, and fifteen gold crowns on a wall hanging, while the servants are preparing a banquet of nineteen dishes. All the hunters are men, however, and three of the servants are male, one a cook. The story is delightful with each number presented through a unique dimension to the tale. The text, which is supported by amusing illustrations, is more advanced than the mathematics content.

Kitchen, Bert. *Animal Numbers.* New York: Dial Books for Young Readers, 1987.

ISBN 0-8037-0459-3 $11.95

☆ Single concept, PS+

"Answer me this / If you're in the mood, / How many babies / In each mother's brood?" Clear, warm watercolors of intricately defined animal portraits provide an elegant counting book for observant young readers. Similar in design to Kitchen's equally distinctive alphabet book, each symbol is represented in bold, black print with the animals intertwined. The numerals 1 through 10 are presented, then 15, 25, 50, 75, and 100. An interesting feature of the painting for 100 is that the readers, should they choose to count so many, are asked to count frogs from the frog's eggs through the growing tadpoles to the frog herself. The final page includes interesting information on the animals featured.

Lee, J. Douglas. *Animal 1*2*3!* Illustrated by Elphin Lloyd-Jones. Milwaukee, Wis.: Gareth Stevens, 1985.

ISBN 0-918831-96-2
ISBN 0-918831-95-4 (library binding) $9.95

★★★ Single concept, PS–2

Lively illustrations and alliterative text introduce the numbers one through nineteen. Each two-page spread presents combinations of animals and descriptive vocabulary—three timid tigers, eight elegant elephants, thirteen thirsty thrushes—to reinforce counting skills. Descriptions of the unique animals are included at the end of the book as well as special activities to encourage the reader to interact further with the outrageously funny illustrations. The activities at the end of the book challenge the more advanced child to explore addition concepts. A bibliography of associated readings about numbers and words will encourage further exploration.

Le Sieg, Theo. *Wacky Wednesday.* Illustrated by George Booth. New York: Beginner Books, 1974.

ISBN 0-394-82912-3		$5.95
ISBN 0-394-82912-8	(library binding)	6.99

☆ Single concept, K–4

"It all began with that shoe on the wall," muses a young boy as he recounts his adventures on wacky Wednesday. When he looked out his bedroom window and proceeded down the hall, "More things were wacky"—he saw two and then three more. On each double page, the reader is to find and count such baffling things as a cup hanging in midair, a worm chasing a bird, or an umbrella in the kettle. On some pages, it appears there are more out-of-place items to count than the number in the text suggests. The colorful, humorous illustrations support a story line that involves counting sets from one to twelve with a final challenge of counting to twenty. Young readers should enjoy the challenge and humor throughout this clever book.

McGough, Roger. *Counting by Numbers.* Illustrated by Markéta Prachatická. New York: Viking Kestrel, 1989.

ISBN 0-670-82671-5	$8.95

☆ Single concept, PS

Whimsical, unique illustrations are the highlight of this appealing counting book with numbers from one to twenty-five. Art styles and subjects vary vastly from page to page. A detailed pen-and-ink drawing depicts "twenty telescopes untwinkling stars"; brown tones humorously illustrate "nineteen nuns out bopping"; an avant-garde style reminiscent of cubism captures "three very silly men." For emphasis, the number word is printed in dark gray. Some sets are arranged in arrays or groups for ease in counting; in some illustrations, each object is numbered. The final page simply depicts the numeral 25, rather than a set of twenty-five objects.

My First Look at Numbers. New York: Random House, 1990.

ISBN 0-679-80533-8	$6.95

★★ Single concept, PS–K

Crisp photographs make the appealing objects easy to count in this beginning counting book. Colorful objects are photographed against a white background, and bold numerals show the numbers one through ten. Larger sets of 20 crayons and 100 candies are also included. The latter photograph is particularly striking because the different candies are arranged in rows of 10 in a simple pattern. Number word names are included in the simple text.

Oxenbury, Helen. *Helen Oxenbury's Numbers of Things.* New York: Delacorte Press, 1983.

ISBN 0-385-29288-0		$9.95
ISBN 0-385-29289-9	(library binding)	9.95

★★ Single concept, PS–3

Oxenbury's distinctive humor and illustrative style fill this engaging counting book. Sequential numbers, from one lion to ten animals, are explored before some multiples of ten, from twenty balloons to fifty ladybugs, are introduced. The appropriate numeral and number word appear on each double-page spread. The last page, an illustration of outer space, touches on the concept of large numbers when the text asks, "How many stars?"

Peppe, Rodney. *Circus Numbers.* New York: Delacorte Press, 1969.

ISBN 0-440-01288-0	$5.95
ISBN 0-440-01289-9	3.69
ISBN 0-385-29424-7	11.95

☆ Single concept, PS–3

From one ringmaster to ten clowns, lively illustrations reflecting the color and excitement of the circus furnish delightful opportunities to count from one to ten. Each double-page spread includes appropriate numerals and number words to reflect the number of circus performers featured on the page. The final pages include twenty doves and a humorous representation of 100 elephants. The last page shows a view of the crowded circus audience and asks, "How many people?"

Note: The third ISBN number was listed as *Circus Numbers: A Counting Book* with a 1986 date; we assume this is a reprint.

Reiss, John J. *Numbers.* New York: Bradbury Press, 1971.

ISBN 0-02-776150-9	$12.95

☆ Single concept, PS–2

Number values 1 through 20 inclusive and multiples of 10 to 100 are colorfully illustrated in effective groups with plainly identifiable and relevant objects. Occasionally, confusion arises where the subdivisions of a single object are used to illustrate a number concept; for example, a cloverleaf illustrates the concept of 3. The last page, illustrating raindrops, depicts the concept of 1000.

Sis, Peter. *Waving.* New York: Greenwillow Books, 1988.

ISBN 0-688-07159-7		
ISBN 0-688-07160-0	(library binding)	$11.95

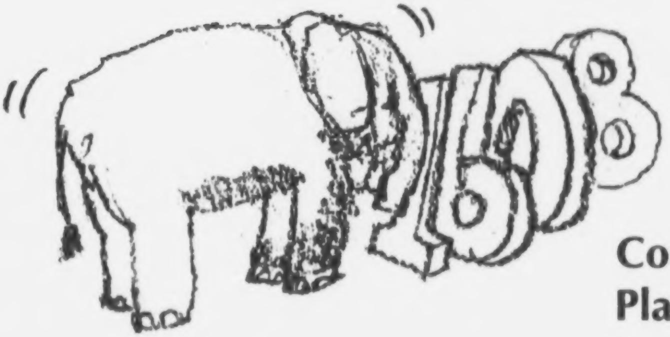
☆ Single concept, PS–2

Mary's mother waved for one taxi, but instead of a taxi, two bicyclists waved at Mary and her mother, and then three boys walking dogs waved at the waving bicyclists. Continuing misinterpretations of who is waving at whom introduce numbers one through fifteen and their corresponding numerals. The final set is fifteen taxi drivers waving at everyone; so Mary and her mother walk home. Color is effectively used to introduce each new set against gray urban street scenes. Watercolor and pen-and-ink illustrations and a simple text tell a humorous, appealing story.

Tudor, Tasha. *One Is One.* New York: Macmillan Publishing Co., 1956.
ISBN 0-02-688535-2 (paper) $3.95

☆ Single concept, PS–1

Tasha Tudor's distinctive rosy-cheeked children are here for the counting. Charming illustrations and original verse present numbers and their values, one through twenty. The appealing quality of Tudor's artwork makes the book a pleasure to read and reread, though the placement of text and illustrations is sometimes misleading.



Counting—Place Value

This group of counting books has many of the characteristics of other counting books that have been mentioned in the "Counting—One to Ten" and the "Counting—Large Numbers" categories. They are grouped into a separate category because they, unlike the others, imply the concept of place value; objects are explicitly arranged in sets of ten to encourage counting by tens. Sugita's *Goodnight, 1, 2, 3* could be used as an introduction to the concept and as a springboard to visualizing other ways to represent eleven. A more sophisticated treatment of the concept of place value is found in Howard's triumphant *I Can Count to a Hundred ... Can You?*

Anno, Mitsumasa. *Anno's Counting Book.* New York: Thomas Y. Crowell Publishers, 1977.

See Counting—Zero

Gillen, Patricia Bellan. *My Signing Book of Numbers.* Washington, D.C.: Kendall Green Publications, 1987.

See Number Concepts

Hoban, Tana. *Count and See.* New York: Macmillan Publishing Co., 1972.

ISBN 0-02-744800-2 (paper) $12.95

★★★ Single concept, PS–2

Number concepts 1 through 15, 20, 30, 40, 50, and 100 are introduced. Each spread includes the number symbol, name, and appropriate number of counters on one page, with the opposite page featuring Hoban's distinctive photographs that capture familiar objects from a child's perspective. Multiples of ten are clearly shown as arrays of counters on the left. The objects in the photographs are clustered in sets of five or ten for ease in counting. In one example, an object is lost in the binding of the paperback edition.

Howard, Katherine. *I Can Count to One Hundred ... Can You?* Illustrated by Michael J. Smollin. New York: Random House, 1979.

ISBN 0-394-94090-3 (library binding)
ISBN 0-394-84090-9 (paper) $1.95

★★★ Multiconcept, PS

Narrated by a busy, cheery mouse, this appealing counting book has many unique features. Each double-page layout introducing the numbers from one to ten has more than one set to count. Each numeral and number word are boldly displayed; each narrative includes the entire word list that the young readers say as they count orally. A summary page of the numbers to ten is followed by the numerals and word names for ten to twenty, complete with counters arranged in bar-graph form. The pattern of decade numbers is effectively illustrated in an example from twenty to thirty. Each number is expressed in a form emphasizing the decade value and the ones value. For example, twenty-three is shown as 20 + 3 = 23 with a set of twenty orange counters and three green counters. The numeral 20 and the 2 in 23 are printed in orange, and the 3s, the ones numerals, are printed in green. Another double-page layout shows a hundreds chart with each decade printed in a different color; the word name for each new decade number is printed beside the numeral. The design and illustrations provide an excellent opportunity for children to explore counting and number patterns. The concepts of this book could be explored by children of many ages.

McMillan, Bruce. *Counting Wildflowers.* New York: Lothrop, Lee & Shepard Books, 1986.

ISBN 0-688-02859-4 $12.95
ISBN 0-688-02860-8 (library binding) 12.88

★★★ Single concept, PS–1

Daylilies, sundrops, orange hawkweeds, and mullein winks are some of the wildflowers whose beauty is captured in McMillan's color photographs. Across the bottom panel of the first ten pages is a row of ten counters. Two purple counters are in one-to-one correspondence with the two purple spiderworts pictured; the remaining eight counters are green. This pattern continues until eleven red Maltese crosses are matched with one row of red counters plus one more red counter in a second row of ten counters. Each representation clearly shows beginning place value as groups of ten. The green counters also effectively illustrate how many more are needed to obtain ten or another ten. The only text is the name of each type of flower and the appropriate numeral and number word for each number. Additional information about when and where to find these wildflowers is included in the final pages.

Manushkin, Fran. *Walt Disney's 101 Dalmatians: A Counting Book.* Illustrated by Russell Hicks. New York: Disney Press, 1991.

ISBN 1-56282-012-5 $9.95
ISBN 1-56282-032-X (library binding)

★★ Single concept, no age given

Roger and Anitas' walk with their dalmatians, Pongo and Perdita and their puppies, is interrupted when the puppies scatter after being startled by a fire truck. The remainder of the story is the search for the puppies, which are found in groups of ten. It is a challenge to find all ten puppies scattered throughout each new scene. For each layout, the reader is asked to keep a cumulative count; "Find 10 more puppies and count them from 21 to 30 … from 31 to 40…." Concern is expressed when 99 puppies are found, but there were supposed to be 101 dalmatians; the reader is asked to solve the problem. The format clearly links counting to place-value ideas.

Richards, Dorothy Fay. *Wise Owl's Counting Book.* Illustrated by Helen Endres. Chicago: Children's Press, 1981.

ISBN 0-516-06565-3 $10.60

★★ Single concept, 1–2

Wise Owl is tired. He needs to go on vacation by himself, but others, first one by one and then ten at a time, want to accompany him. When fifty marchers add to the caravan, Wise Owl is ready to collapse! After counting by ones to 10 and then by tens to 50, the reader should enjoy the challenge that is given at the book's conclusion to count by tens to 100. For children who have had some experience with counting by tens, or for children with the help of an adult, this book should be fun to read. The text is simply written. Owl's growing frustration with his plight provides an entertaining plot that comes to a satisfying conclusion. The illustrations, colorful and humorous, support the text.

Sugita, Yutaka. *Goodnight, 1, 2, 3.* New York: Scroll Press, 1971.

ISBN 0-87592-022-5 $9.95

★★★ Single concept, PS–2

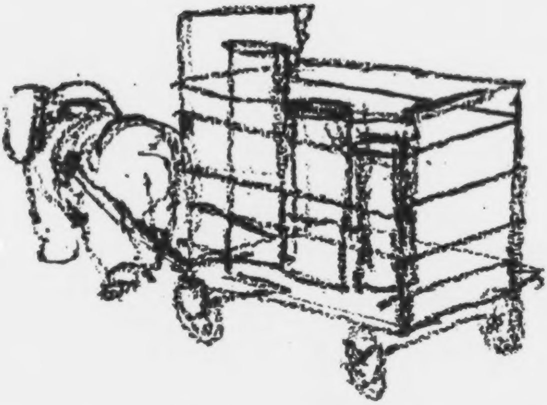
Vibrant colors glow from each rich, magnificent page of this bedtime counting book. A sleepless child sequentially counts from one to eleven colorful, appealing animals and objects. This beginning counting book has no text; only the numeral, the appropriate number of objects, and the exploring child appear on each page. The pages depicting 11 are particularly well done; ten balloons are on the left-hand page, and the eleventh balloon is tied to the 1 in the ones place in the numeral 11 on the right-hand page. Although this is a single concept book, there are also opportunities to teach color and spatial relationships.

Walt Disney Productions. *Mickey's Counting Book.* New York: Random House, 1983.

ISBN 0-394-85735-6 $5.99
ISBN 0-394-95735-0 (library binding)

☆ Single concept, PS–1

Each page depicts Mickey Mouse in a situation in which he is surrounded by sets of one through ten items. The young reader is asked to find appropriate sets, yet each set is clearly labeled. After Mickey visits ten penguins, a review page is provided asking the reader to count again. The following page deftly uses the page division to lead the reader into counting ten and one more, ten and two more, ten and three more up to twenty. The disjointed text and cartoon illustrations pale in comparison to Disney's original medium of film.



Counting—Bar Graphs

The end pages that appear in the books selected for this category may have been designed to be an introduction to what is to come and a summary of what has been. The graphs clearly show "one more than" or "one less than" relationships between consecutive numbers. But more than that, they lend themselves to an introduction of summarizing and documenting information through pictographs. This format could encourage the reader to use graphing activities to represent consecutive numbers or other data.

Calmenson, Stephanie. *Ten Furry Monsters.* Illustrated by Maxie Chambliss. New York: Parents Magazine Press, 1984.

See Counting—Operations

Carle, Eric. *Rooster's Off to See the World.* Natick, Mass.: Picture Book Studio, 1972.

ISBN 0-88707-042-1 $12.95

★★★ Single concept, PS+

Rooster sets off to see the world and is joined by two cats, three dogs, four turtles, and five fish. As readers travel with Rooster and his companions, they have a graphic opportunity to count forward and backward as Rooster is gradually deserted by the sets of animals who had joined him on his journey. The book is beautifully illustrated in the vibrantly colorful collage technique so typical of Eric Carle's work. Carle reinforces the mathematical concepts with tiny silhouetted diagrams on the top right-hand side of every other page. These diagrams could be used as an introduction to bar graphs.

Crews, Donald. *Ten Black Dots.* New York: Greenwillow Books, 1986.

ISBN 0-688-06067-6 $11.88
ISBN 0-688-06068-4 (library binding)

☆ Single concept, PS–3

Colorful drawings contain big black dots that represent the cardinal numbers one through ten. The big black dots show up as three dots on a snowman's face, four knobs on a radio, and five buttons on a shirt. The simple rhyming text introduces the numeral, word name, and two examples for counting each number. At the end of the book, a chart of the numbers one through ten clearly shows the "one more" concept.

Gardner, Beau. *Can You Imagine ...? A Counting Book.* New York: Dodd, Mead & Co., 1987.

ISBN 0-396-09001-X $9.95

★★★ Single concept, PS–2

Can you imagine one whale wearing a veil or twelve swans twirling batons? Zany humor in strong, vibrant illustrations and rhyming text presents the numbers one through twelve. The funny antics of the animals are accompanied by the appropriate numerals and number words. At the end of the book, the number concepts are reviewed effectively by a chart of silhouetted forms of the animals featured so imaginatively throughout the text. This chart clearly illustrates the "one more than" concept.

Koch, Michelle. *Just One More.* New York: Greenwillow Books, 1989.

ISBN 0-688-08127-4 $11.95
ISBN 0-688-08128-2 (library binding)

★★ Single concept, PS+

Pairs of singular and plural forms—goose and geese, child and children, foot and feet, knife and knives, moose and moose—label each childlike watercolor of the appropriate objects. At first glance, this appears to be a book simply about the plural forms of irregular nouns. On closer examination, the reader will notice that the number of objects to illustrate each plural form is always one more than the previous set. Sequentially, there are two children, three geese, four moose, five leaves, ..., fifteen sheep. On the final page, each set from one through fifteen is arranged and labeled in a vertical row; this bar-graph arrangement effectively shows that each subsequent set is one more. No number word names are noted; the numerals are introduced only on the closing page.

Ormerod, Jan. *Young Joe.* New York: Lothrop, Lee & Shepard Books, 1986.

ISBN 0-688-04210-4

☆ Single concept, PS

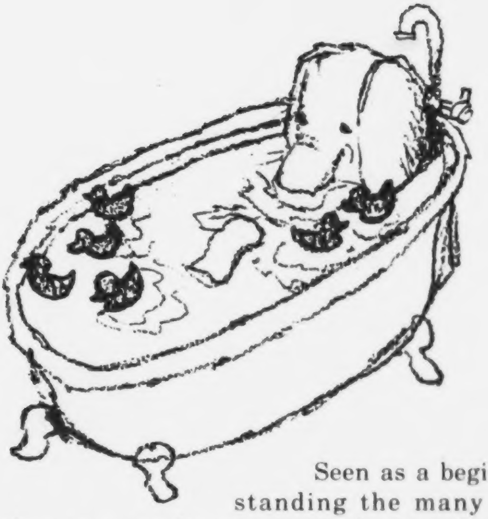
Joe, a young African-American child, counts off sets of animals from one fish to ten piglets by holding up the appropriate number of fingers for each set. The illustrations simply and clearly complement the minimal text that introduces the word names from one to ten. All the animals are illustrated in pictograph format in the book's endpapers. The book's beginning pages show the "one more than" concept of sequential counting because the animals are arranged in columns and are labeled by the numerals from one to ten. The second pictograph depicts the same columns of animals arranged from ten to one.

Youldon, Gillian. *Numbers.* New York: Franklin Watts, 1986.

ISBN 0-531-02388-5
ISBN 0-531-00440-6 (library binding) $9.40

★★ Single concept, PS–2

Each page of this brightly colored counting book has been divided into three parts, which can be turned individually. Each third, when turned, reveals a number statement on the left and an appropriate set of objects on the right. This design allows the reader to count the numbers in order from one to ten or to flip back and forth among the strips. At any one time, the book could show one barn, seven cottages, and three pigs or six fields, four scarecrows, and three pigs. The last double page shows the numbers one through ten in a chart that depicts each set as one more than the previous set.



Counting—Partitions

Seen as a beginning step toward understanding the many combinations in which number sets can be represented, these books have been set apart because they contain an introduction to partitions. Owen's *Annie's One to Ten* illustrates the commutative pairs for ten, and McCleod's *One Snail and Me* exposes the young reader to the inevitability of the fact that a group of eight, one, and one is the same as a group of five, three, and two. Bruna's *I Can Count More* is another, more complex, example of the partitioning of sets.

Anno, Mitsumasa. *Anno's Counting House.* New York: Philomel Books, 1982.

ISBN 0-399-20896-8 $12.95

★★★ Single concept, PS–3

One by one, ten children move from their current home to the house next door. Readers will be intrigued by this simple plot, and the unique design puts this book in a class of its own. The interior of the house being vacated is always on a left-hand page; the house the children are moving into is shown on a right-hand page. The pages are separated by a divider page whose sides show the stately exterior of each house. Thus when the readers open the book, they see the interior of the old house and the exterior of the new house. When the divider page is turned, the interior of the new house and the exterior of the former house appear. Window cutouts in the divider pages give readers a glimpse of some of the children in the four levels of the house, but the readers cannot verify the number of children in the house until they turn the page. The format offers a fascinating approach to the partitions of ten. The house interiors are illustrated in detailed black-and-white drawings; the ten children are in color. An introductory note to readers explains the use of the book; a section at the back gives parents and other adults more suggestions.

Bruna, Dick. *I Can Count More.* Los Angeles: Price/Stern/Sloan Publishers, 1984.

See Counting—Large Numbers

Hoban, Russell. *Ten What? A Mystery Counting Book.* Illustrated by Sylvie Selig. New York: Charles Scribner's Sons, 1975.

ISBN 0-684-13400-4 OP

★★★ Single concept, PS–1

Each double-page spread of this colorfully illustrated book introduces a single number concept in an exciting and challenging way. The unifying theme of the story is suggested by the title, and the reader follows the strange-looking, trench-coated detectives in their search for clues to the solution of the mystery. Hoban's busy, bright illustrations present a mystery on every page. On the pages depicting the number concept *four,* the numeral is presented with enough text to continue the story line, and the illustrations depict four floating glasses, four fidgeting mice, and four crawling crabs within the scenery where the ever-watchful detectives continue their search. The challenge for readers is to check and double-check how many sets of four they can find. The objects in each set are arranged in different combinations; for example, five is shown as four and one and as three and two. At no time can readers be complacent about their success, however, because sometimes more and sometimes fewer objects are in the sets that are displayed on each page.

Kredenser, Gail. *One Dancing Drum.* Illustrated by Stanley Mack. New York: S. G. Phillips, 1971.

ISBN 0-87599-178-5 $12.95

★★★ Single concept, K–3

Groups of musicians march on each page to introduce each symbol and word for numbers one through ten. The alliterative text—"six persnickety piccolos" and "seven triumphant trumpets"—cleverly introduces each number concept. As the musicians accumulate on an increasingly crowded bandstand, the reader will anticipate the inevitable collapse. The resulting confusion challenges the reader to relocate the sets of musicians previously introduced, irrespective of how each set of musicians is separated. Cartoonlike illustrations give comic support to the lively text.

McLeod, Emilie W. *One Snail and Me.* Boston: Little, Brown & Co., 1961.

ISBN, none given OP

★★★ Single concept, K+

Bath time would be so much fun, a little girl imagines, if only she could invite some interesting animals to share her bath. "1 snail makes a beautiful, bubbly, silvery trail on the edge of the bathtub...."

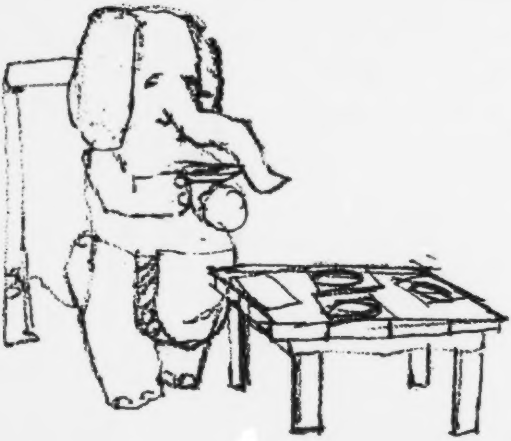
The results of her imaginings are humorously evident in the colorful full-page illustrations and wonderfully descriptive text of this charming tale. As the animals pile into the bath, those in the tub move around to allow the new ones to fit. As they reassemble in different groupings, the reader observes that groups of eight, one, and one are the same as groups of five, three, and two. After each additional group is added, the text motivates the reader to account for all the animals in descending order: ten minnows, nine hippopotamuses, eight alligators, and so on. What a mess! The book could lead to good discussions on part-whole combinations and estimations on capacity.

Owen, Annie. *Annie's One to Ten.* New York: Alfred A. Knopf, 1988.

ISBN 0-394-82791-0 $8.95
ISBN 0-394-92791-5 (library binding)

★★ Single concept, PS–2

Illustrations of a variety of objects demonstrate the partitions of ten. For each number pair, the items composing the four examples are related in some way. For example, the "four and six" items are all forms of transportation; the "seven and three" pictures are all fruits and vegetables. Illustrations for each number pair and its commutative partner are delicate but precise, brightly-colored, and attractive. The number pairs are presented in order, starting with "zero and ten," then "one and nine," and progressing up to "nine and one." The first partition shown is written as "no carrots and ten rabbits" rather than "zero carrots and ten rabbits," and the last example is simply "ten" rather than "ten and zero." This book offers a unique way to introduce and reinforce the basic facts for ten, to count up to ten, and to classify various objects. One possible drawback is that on some pages, the items are hard to distinguish from each other—the pastries from the sandwiches, the cookies from the rolls, and the trucks from the vans. This could be seen as more of a challenge for the reader.



Counting—Operations

Still within the broad category of counting books and still containing the many mathematical virtues already discussed as characteristic of this genre, the books annotated below have been assigned to this category because of their potential for connecting the counting function with concepts on a more advanced level of mathematical understanding. Addition or subtraction concepts are implied in some books, since the same set is increased or decreased by similar objects. Beginning addition can be explored in Punnett's *Count the Possums* as the baby possums reappear one by one. In Ehlert's *Fish Eyes: A Book to Count On,* adding one more is suggested, and the mathematical word *plus* is used. Beginning subtraction can be explored in Becker's *Seven Little Rabbits.*

Becker, John. *Seven Little Rabbits.* Illustrated by Barbara Cooney. New York: Scholastic, 1973.

ISBN 0-590-41197-7

★★ Single concept, PS–1

Repetitive, rhyming verse encourages children to count backward from seven to one. Seven rabbits leave home to visit old friend toad. As each rabbit tires and journeys back to mole's house, one more rabbit is tucked into mole's bed. The story ends with all seven rabbits tucked into mole's bed, mole sleeping in a chair, and toad wondering where his friends are. The whimsical illustrations enhance the text with additional humor. The story also introduces beginning subtraction concepts as one less than the previous set.

Bucknall, Caroline. *One Bear All Alone.* New York: Dial Books for Young Readers, 1985.

ISBN 0-8037-0238-8 $9.95

☆ Single concept, PS–2

Clever illustrations of each numeral from 1 to 10 dominate the left-hand page. The opposite page is richly illustrated in warm and winsome scenes depicting the activities of an appropriate number of appealing bears. Each number and scene is introduced simply through rhyme. The final layout depicts all ten bears romping in a row, with the numerals from 1 to 10 emblazoned on their sweatshirts.

Burningham, John. *John Burningham's 1 2 3.* New York: Crown Publishers, 1986.

ISBN 0-517-55962-5 $4.95

☆ Single concept, PS–1

Childlike crayon drawings illustrate this beginning counting book. A child appears and is joined, one by one, by nine other children. Each double-page spread shows the children enjoying their play in a large, easy-to-climb apple tree. The children scatter at the arrival of a large tiger who appears to want to play. The story is charmingly told through the illustrations; the only text is the accompanying numerals and word names for each number. An extension activity is suggested by the layout of the book; the reader can create number sentences that reflect the grouping of the children illustrated on each page.

Calmenson, Stephanie. *Ten Furry Monsters.* Illustrated by Maxie Chambliss. New York: Parents Magazine Press, 1984.

ISBN 0-8193-1128-6 $5.95

★★ Single concept, PS–3

Gaily colored pictures of ten monster children, each with a numeral emblazoned on the front and back of its shirt, accompany a cheerful story. Subtraction situations occur in the rhyming text as the children disappear from the pages. The illustrations depict the monsters that have "disappeared" as partially hidden. The reader is to count the remaining monsters to verify how many are left. When Mother Monster returns to fetch them from the park, she declares, "I know you're all here somewhere, so I will count to ten." As she counts, they reappear in sequential order. All ten monsters are also shown on the flyleaves in an effective pictograph from 10 to 0 and 0 to 10 that clearly shows "one less than" and "one more than" concepts of counting.

Christelow, Eileen. *Five Little Monkeys Jumping on the Bed.* New York: Clarion Books, 1989.

See Chants, Songs, and Rhymes

de Regniers, Beatrice Schenk. *So Many Cats!* Illustrated by Ellen Weiss. New York: Clarion Books, 1985.

ISBN 0-89919-322-6 $13.95
ISBN 0-317-68258-X

★★ Single concept, PS–3

Amusing pastel illustrations complement the delightful story line telling how a household grows from an only cat to twelve cats. Each new set of unique arrivals is introduced through irregular verse and appealing illustrations. The reader is asked periodically to count to verify the total number of accumulating cats as they are named and shown in typical feline antics. The charming story presents an opportunity to introduce addition concepts.

Ehlert, Lois. *Fish Eyes: A Book You Can Count On.* Orlando, Fla.: Harcourt Brace Jovanovich, 1990.

ISBN 0-15-228050-2 $13.95

☆ Single concept, no age given

Bold bright colors sharply define stylized fish as one lone black fish swims through each set outlined against the blue background of the sea. From one green fish to ten darting fish, sets from one to ten are represented and accompanied by the appropriate numeral. Ehlert creates more than the typical counting book, since the reader is encouraged to include the one black fish in the total count. On the page showing five spotted fish, an added line states, "5 spotted fish plus me (the black fish) makes 6."

Fujikawa, Gyo. *Ten Little Babies.* New York: Random House, 1989.

ISBN 0-394-89033-7 $4.95

☆ Single concept, PS–1

Fujikawa's fun-filled illustrations in delicate pastels set the stage for his adaptation of a traditional rhyme. "Ten little babies / All set to dine, / One wasn't hungry, / And then there were nine." The illustrations of babies, representing both sexes and different cultures, capture and extend the actions implied by this simple rhyme. Beginning subtraction concepts are implied, since the baby who is going to disappear is clearly indicated. The sturdy pages support the potential for repeated readings.

Gerstein, Mordicai. *Roll Over!* New York: Crown Publishers, 1984.

See Chants, Songs, and Rhymes

Gretz, Susanna. *Teddy Bears 1 to 10.* New York: Four Winds Press, 1986.

ISBN 0-02-738140-4 $12.95

★★★ Single concept, PS–K

Gretz's familiar, lovable teddy bears are the vehicle for introducing the numbers one through ten. Comical illustrations clearly and simply present the number concepts while at the same time showing an enjoyable sequential documentation of events. The text appears on one page; the opposite page colorfully depicts one teddy bear, two old teddy bears, three dirty old teddy bears, and so on. The appealing teddy bears increase by one with each step of a washing, cleaning, and drying process, before ten teddy bears are home for tea.

Hawkins, Colin, and **Jacqui Hawkins.** *How Many Are in This Old Car? A Counting Book.* New York: G. P. Putnam's Sons, 1988.
ISBN 0-399-21565-4 $11.95

★★★ Single concept, K–3

Bear goes for an outing in his touring car. He is joined progressively by a variety of animals who climb aboard despite his concern about the capability of the old car to handle a crowd. As each animal appears, cartoon-style balloons containing humorous rhyming couplets express the amusing comments and concerns of the growing number of riders. A horse trots along the field beside the slowly moving vehicle keeping a numerical count of the riders. The inevitable collapse of the car provides a satisfactory slapstick ending for the young reader. The brightly-colored, expressive, action-packed illustrations make this simple story especially entertaining. Because of the manner in which the story is told, this book is a good introduction for *counting on*. Children will enjoy role-playing with this story.

Koontz, Robin Michal. *This Old Man, the Counting Song.* New York: Dodd, Mead & Co., 1988.

See Chants, Songs, and Rhymes

Lee, J. Douglas. *Animal 1*2*3!* Illustrated by Elphin Lloyd-Jones. Milwaukee, Wis.: Gareth Stevens, 1985.

See Counting—Large Numbers.

Lionni, Leo. *Numbers to Talk About.* New York: Pantheon Books, 1985.
ISBN 0-394-87002-6 $3.95

★ Single concept, PS

Leo Lionni's perky little collage mice introduce the numbers one to ten and their numerals. There is no text in this sturdy little cardboard book. Although this is a beginning counting book, some partials are shown. Because each new set shows one more mouse, the illustrations suggest beginning addition concepts.

Mack, Stan. *Ten Bears in My Bed.* New York: Random House, 1974.

See Chants, Songs, and Rhymes

Oechsli, Kelly. *Too Many Monkeys: A Counting Rhyme.* New York: Golden Press, 1980.

See Chants, Songs, and Rhymes

Peek, Merle. *Roll Over!* New York: Clarion Books, 1981.

See Chants, Songs, and Rhymes

Pomerantz, Charlotte. *One Duck, Another Duck.* Illustrated by Jose Aruego and Ariane Dewey. New York: Greenwillow Books, 1984.

ISBN 0-688-03744-5		$10.25
ISBN 0-688-03745-3	(library binding)	10.88

☆ Single concept, PS–1

The "one more" concept is emphasized in this counting book as a baby owl learns to count to ten. Each time the owl counts the last duck, another duck appears; so the counting becomes "Two ducks, another duck ... / Three ducks, another duck ... / Four ducks, another duck...." Class-inclusion concepts are introduced in the book when a swan appears. The baby owl is reminded to count ducks only. Simple colorful drawings illustrate the story.

Punnett, Dick. *Count the Possums.* Illustrated by Tom Dunnington. Elgin, Ill.: Child's World, 1982.

ISBN 0-89565-215-3	$8.45

★★★ Single concept, PS–2

"Please speak right up; our search has begun. / Tell our Mama she's found number ___." This invitation is issued on the opening pages for the reader to help Mama possum by saying the missing number. The story unfolds as proud Mama possum, with her ten babies hanging on her tail, is caught in a howling wind and the babies are scattered everywhere. As she searches and finds one baby at a time, the reader is involved in predicting and counting. The format lends itself to beginning addition, where the new sum is found by counting on. For example, a couplet states and the illustration shows, "Two on her tail, and one in a tree. / Tell our Mama she's found number ___." After the reader turns the page, the next illustration shows three possums on Mama's tail and includes the word *three* and its numeral. The predictable rhyming text is complemented by simple, humorous illustrations that highlight Mama's parental pride and concern.

Raffi. *Five Little Ducks.* Illustrated by Jose Aruego and Ariane Dewey. New York: Crown Publishers, 1989.

See Chants, Songs, and Rhymes

Rees, Mary. *Ten in a Bed.* Boston: Little, Brown & Co., 1988.

See Chants, Songs, and Rhymes

Robinson, Nancy L. *Where Did My Little Fox Go?* Illustrated by Tom Eaton. Champaign, Ill.: Garrard Publishing Co., 1977.

ISBN 0-8116-4405-7	$6.69

☆ Multiconcept, K–4

Cartoon drawings depict Mother Fox and nine young foxes in a contrived story involving number. Subtraction is illustrated when six of the foxes run off to hide. One illustration depicts multiplication or repeated addition as four pairs of foxes walk up the path. The mystery of a missing fox is solved when it is realized that the fox counting the others forgot to count himself.

Rubel, Nicole. *Pirate Jupiter and the Moondogs.* New York: Dial Books for Young Readers, 1985.

ISBN 0-8037-0164-0 (paper) $4.95
ISBN 0-8037-0145-4
ISBN 0-8037-0146-2 (library binding) 11.95

☆ Single concept, PS–3

Blast off in search of treasure with Pirate Jupiter and his motley crew! This zany tale of unlikely space adventure follows Jupiter's devious ways to avoid sharing the hidden treasure with his friends. The dastardly pirate leader abandons his crew one by one in blatantly selfish acts. The countdown from ten to one is reversed when the crew manages to regroup to confront him as he digs up the buried treasure chest. This story could promote counting back as a subtraction strategy.

Sendak, Maurice. *One Was Johnny.* New York: Harper & Row Publishers, 1962. Reissued 1991.

ISBN 0-06-443251-3 $3.95

★★ Single concept, PS–3

Simple line drawings with limited color humorously illustrate the story of Johnny, "who lived by himself." But he is soon joined by eight others, including a cat, a dog, a tiger, a monkey, and a robber. As the room becomes increasingly crowded, Johnny's reactions clearly show his dismay. To solve his problem he counts backward, and the animals retreat one by one. The story is told in rhyme; "3 was a cat who chased the rat, / 4 was a dog who came in and sat." The story line and the corresponding illustrations should appeal to the young reader.

Szekeres, Cyndy. *Cyndy Szekeres' Counting Book One to Ten.* Racine, Wis.: Western Publishing Co., 1984.

ISBN 0-307-12141-0 $3.50
ISBN 0-307-12140-0

★ Single concept, K

Vivacious, charming little mice cheerfully represent the numbers one to ten in this slender, yet sturdy, cardboard counting book. A simple text introduces the appropriate numeral and number name on each double page. The detailed pastel illustrations of the environment and the antics of the mice should delight the young reader.

West, Colin. *One Little Elephant.* Chicago: Children's Press, 1987.
See Chants, Songs, and Rhymes.

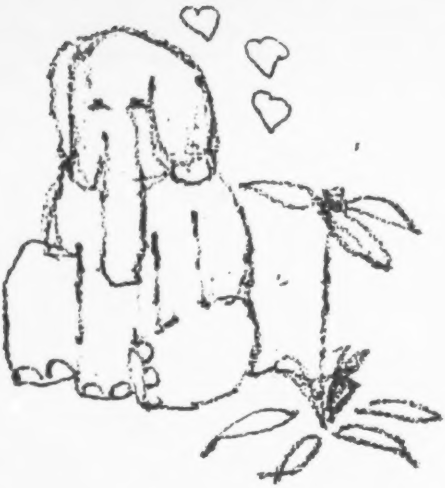
____. *Ten Little Crocodiles.* Chicago: Children's Press, 1987.
See Chants, Songs, and Rhymes.

Ziefert, Harriet. *A Dozen Dogs: A Read-and-Count Story.* Illustrated by Carol Nicklaus. New York: Random House, 1985.

ISBN 0-394-96935-9 $5.99
ISBN 0-394-86935-4 (paper) 2.95

☆ Multiconcept, PS–1

More than a simple counting book, this text encourages children to explore operations as two dogs, then five dogs, then twin dogs, and then three hungry dogs go to the beach to play. Each chapter presents a different, but equally contrived, short story line. The illustrations are cartoonlike.



Counting—Other Number Concepts

Books in this final counting category are placed here because, to be used successfully, they require an understanding beyond simple counting and a higher level of confidence in knowledge of enumeration. Some of these more sophisticated opportunities include counting partials within a set, such as Pienkowski's *Numbers* and Testa's *If You Take a Pencil.* Readers are challenged to determine how many by counting, comparing sets, and exploring one-to-one correspondence in Miller's *Farm Counting Book.* Allen's *Numbers: A First Counting Book* includes opportunities for the reader to determine that the arrangement of the objects does not affect the number in the set. Activities in Gigante's *How Many Snails?,* Manley's *Animals One to Ten,* Thomson's *All about 1, 2, 3,* and Wylie and Wylie's *How Many Monsters?* involve the challenges of classifying and counting part of a set. Nonsequential counting is encountered in books by Allington, Carle, and Hynard. Stories such as Hynard's *Percival's Party, Sesame Street One, Two, Three Story Book* by Kingsley, Moss, Stiles, and Wilcox, or Burningham's picture stories could be a springboard for readers to create and share their own number stories.

Patterns in some books lead to preliminary ideas in number theory. Primes and composites are implied in Wahl's photographs of flowers in *I Can Count the Petals of a Flower.* The pull tabs in Crowther and Seymour's *Numbers* could be used to explore the differences of one between consecutive numbers, or the book could lead to preliminary study of the pattern of odd and even numbers. All these books have one common idea—using counting as a point of departure to explore more sophisticated mathematical ideas.

Allen, Robert. *Numbers: A First Counting Book.* Illustrated by Mottke Weissman. New York: Platt & Munk, 1968.

ISBN, none given $3.95

★★ Single concept, PS–1

Color photographs illustrate the numbers one though ten. Numerals only are used in the text. Only in the first section of the book are the numbers introduced in sequence. The second part of the book has opportunities for the reader to continue to determine "How many?" Some situations involve comparing two sets to determine which set has more. The focus is the number in the set; other variables, such as arrangement and size, are not relevant. The objects to be counted vary in their arrangements—spread out or clustered objects and straight or circular lines. Some situations show a few large objects; others show many small objects. Addition is defined as "another way to count things"; this section, which introduces addition, is weak.

Allington, Richard L. *Numbers.* Illustrated by Tom Garcia. Milwaukee, Wis.: Raintree Publishers, 1979.

ISBN 0-8172-1278-7	(library binding)	$15.33
ISBN 0-8172-2483-1	(paper)	9.75

★★ Single concept, K–2

After an introductory two-page spread giving the numerals 1 through 10 and the corresponding sets, the reader becomes involved in counting colorful sets of animals to determine how many there are. Counting is necessary because the book is designed so that the numbers are not presented in sequence, and the numeral answer to each question is found by turning the page. In another activity, the reader is challenged to find numerals that are cleverly integrated into an illustration of a house and its surrounding yard. In a matching activity, recognition of the numerals and their meaning is reinforced by having the reader match the numerals 1 through 10 with new sets of animals. The book's final page suggests two follow-up activities for making one's own number book or building one's own number collection

Burningham, John. *Just Cats.* New York: Viking Press, 1983.

ISBN 0-670-41094-2 OP

★★ Single concept, PS–1

Just Cats is part of a series of six sturdy cardboard books for young children. There is no text in these interesting little foldout books, which makes the series ideal for the reader to make up a story to go with the simple, pleasing illustrations. Other books in the series that were not available for review include *Read One,* where word names for numbers are introduced; *Five Down,* where numbers are related to symbols; and *Count Up,* where learning sets is the focus. In *Just Cats,* one cat sets off with a huge cumbersome picnic basket. Struggling with the load, the cat is joined one by one by four other cats. Along the way, the cats encounter and outwit various other groups of animals. Numerals from 1 to 5 are noted, as the reader distinguishes and counts just cats.

Carle, Eric. *My Very First Book of Numbers.* Reprint. New York: Crowell Junior Books, 1985.

ISBN 0-694-00012-4 $4.95

☆ Single concept, PS–K

Carle develops this book in the same format as *My Very First Book of Shapes.* The cardboard pages are cut horizontally with the numerals 1 through10 and the appropriate number of black squares on the top half of the page. Vibrant pictures of fruit in sets of one through ten are pictured on the bottom half of the pages. The numeral pages are ordered sequentially, whereas the pictures of fruit are ordered randomly. The child can turn the separate pages to match the pictures with the appropriate numeral and number of counters.

Crowther, Robert. *The Most Amazing Hide-and-Seek Counting Book.* New York: Viking Penguin, 1981.

ISBN 0-670-48997-2 $12.95

★★★ Single concept, PS–1

Numbers 1 through 20 and multiples of 10 through 100 are very colorfully presented, and the numerals, number words, and the names of the objects are the only text. The odd numbers are illustrated by stationary objects on the page; the even-number counters appear as the reader moves some part of the page following directions indicated by arrows. The illustrations for the even numbers are bugs, insects, or animals, and as they appear, there is an impression of actual movement. The movable sections and the pop-up pages make this a very appealing book. Some of the pages illustrate the "one more than" concept in counting through clever design techniques.

Giganti, Paul, Jr. *How Many Snails? A Counting Book.* Illustrated by Donald Crews. New York: Greenwillow Books, 1988.

ISBN 0-688-06369-1
ISBN 0-688-06370-5 (library binding)

☆ Single concept, PS–1

Gouache paints were used to create the simple, colorful illustrations of objects for the reader to classify and count. On each double page, several questions are posed about the large set depicted there. On a page covered with a school of fish, the questions challenge the reader to find how many fish there are, how many fish are red, and how many red fish have their mouths open. The sets, which vary in size up to forty-three, provide discrimination opportunities in color, size, number, and design.

Hoban, Tana. *Twenty-six Letters and Ninety-nine Cents.* New York: Greenwillow Books, 1987.

See Money

Holabird, Katharine. *The Little Mouse 1 2 3.* Illustrated by Helen Craig. New York: Little Simon, 1983.

ISBN 0-671-47732-3 $9.95

☆ Multiconcept, no age given

Intricate pastel illustrations of charming little mice are the dominant feature of this little counting book. The picture on the left-hand page introduces word names, numerals, and a set of mice to be counted for the numbers zero through twelve. Comments about the number and the scene on the right-hand page include such concepts as single, pair, and triple. One-to-one correspondence and informal addition concepts are implied in parts of the text.

Hynard, Julia. *Percival's Party.* Illustrated by Francis Thatcher. Chicago: Children's Press International, 1983.

ISBN 0-516-08941-2 (library binding) $11.67
ISBN 0-516-48941-0 (paper) 2.95

★★ Single concept, PS–3

Percival Trot, a "beautifully ugly" piglet, worries whether anyone will remember his coming birthday. To his surprise, everyone has been shopping and preparing for this special day. A lavishly illustrated book complements an extensive story in which objects are counted, not sequentially, but as they might be encountered in real life—first six, then one, two, and eight objects. The humorous illustrations are worthy of repeated scrutiny as are the challenging vocabulary words in this counting book. A double-page summary provides a colorful opportunity to review the numerals, word names, and the appropriate number of objects for each number one through ten as they appeared in this satisfying story.

Kingsley, Emily Perl, Jeffrey Moss, Norman Stiles, and **Daniel Wilcox.** *Sesame Street One, Two, Three Story Book.* Illustrated by Joseph Mathieu, Kelly Oechsli, Mel Crawford, and Bob Taylor. New York: Random House, 1973.

ISBN 0-394-82694-9 $6.95
ISBN 0-394-92694-3 (library binding) 6.99

★★★ Single concept, PS–4

The Count, a favorite "Sesame Street" character, introduces this clever counting storybook. He appears after each story to reinforce the number concept explained within it. Other familiar characters from the popular television program are encountered throughout the book. Sherlock Hemlock attempts to solve a mystery as he counts two suspicious shoes, two sinister hands, and two beady eyes. The story comes to a hilarious climax when Sherlock turns on the light to find that he has been shining his flashlight at a mirror. This is just one example of how numbers and values from one through ten are interwoven with hilarious story lines throughout this entertaining book.

Lewin, Betsy. *Cat Count.* New York: Dodd, Mead & Co., 1981.
See Number Theory, Patterns, and Relationships

Manley, Deborah. *Animals One to Ten.* Illustrated by Michele Noble. Milwaukee, Wis.: Raintree Publishers, 1979.
ISBN 0-8172-1302-3 $13.31
★★ Multiconcept, PS–3

Numbers from one to ten are introduced by a brief text and colorful pictures of animals. The text consists mainly of questions about part-whole relationships. Collections of animals are referred to as sets, and sets are joined and separated with appropriate questions about numbers of animals. Other concepts presented through the activities are inside and outside, big and small, and equivalent sets. Questions are also posed about the animals, colors, shapes, and people in the scenes.

Miller, Jane. *Farm Counting Book.* Englewood Cliffs, N.J.: Prentice-Hall, 1983.
ISBN 0-13-304790-3 $8.95
☆ Single concept, PS–3

Familiar farm animals and objects appear in colorful photographs. The numerals and number names for one through ten accompany such farm scenes as five cows in a pasture and eight swans in a pond. Additional pages involve the reader in activities such as counting different sets, comparing sets, and exploring one-to-one correspondence by deciding if there are enough bowls for the cats. One flaw is the picture representing 7, which shows seven ducks and a partial picture of two more ducks.

Moncure, Jane Belk. *The Magic Moon Machine.* Illustrated by Linda Hohag. Chicago: Children's Press, 1987.
ISBN 0-516-05733-2 $11.93
ISBN 0-516-45733-0 (paper)
☆ Single concept, PS–2

Kim wants to join the astronaut in the Magic Moon Machine but keeps remembering one more thing he needs to take with him on his trip. It isn't long before the machine is so heavy and overcrowded with Kim's pets, toys, food items, and furnishings for a house that it can't leave the ground. The classification of items by type is clearly defined. Unlike most counting books, the numbers are not introduced in sequence. Kim takes his pony, two cats, four dogs, a bowl with two goldfish, and eight jumping frogs. The review pages at the end of the book help recall the items by numeral and matching number set. The closing question, "What would you take to the moon with you?" could motivate children to choose different categories and list the items in each one.

____. *One Tricky Monkey Up on Top*. Illustrated by Linda Hohag. Chicago: Children's Press, 1988.

ISBN 0-516-05734-0 $10.60
ISBN 0-516-45734-9 (paper)

Single concept, PS–2

Stilted rhyme and unlikely plot are the vehicles for practicing counting. Melissa helps find sets of circus animals who have escaped from the train. Tricky Monkey proves to be the most elusive. The illustrations are attractive, and the text attempts to be conversational by asking questions of the reader. Often there is no way of checking the anticipated response. On one page, "Melissa looks for two seals in a boat. All she finds are fish on a line. How many?" The set is of *nine* fish; thus, the answer is nine. The only clue to the answer's correctness is that *nine* rhymes with *line*. Since the preceding rhymes have been so awkward, this isn't clue enough! The closing page shows the nine fish in the train car labeled nine. Early in the book, all the larger sets, six through ten, are introduced out of order, but they are shown in the appropriate train cars on the closing page.

Pienkowski, Jan. *Numbers*. Reprint. New York: Little Simon, 1981.

ISBN 0-671-44456-5 $3.95

★★★ Single concept, PS–K

Minimal text, brilliant color combinations, and black outlined figures could deceive an adult into thinking that this book is appropriate for only the youngest child. Yet the text and the illustrations combine to do an excellent job of introducing partials and groups of ten. Possibly the value of the book lies in its simplicity. To illustrate four, the numeral and four ducks are clearly visible as counters above the caption "four ducks" on the left-hand page. On the right-hand page, the four ducks are seen swimming in a stream lined with four cattails; one of the ducks is shown partially as it dives into the water. Originally published in Great Britain, this Pienkowski book is reprinted as a nursery board book in an 8.5 cm by 8.5 cm format.

Pluckrose, Henry. *Counting*. Illustrated by Chris Fairclough. New York: Franklin Watts, 1988.

ISBN 0-531-10524-5 $9.90

★★ Single concept, PS–6

Questions throughout the text encourage discussion about the mathematical concept of counting. The beautiful photographs focus expertly on familiar objects in natural settings. A pattern using bright red and blue counters invites readers to use their own counters to complete a matching design. This activity is followed by a challenging review of counting activities, as the reader is asked to find how many counters, how many zoo animals, and how many people are on one colorful spread. *One-to-one correspondence, more than,* and *less than* are also introduced as the reader compares sets to determine which has more.

Potter, Beatrix. *Peter Rabbit's 1 2 3.* New York: Frederick Warne, 1987.
ISBN 0-7232-3424-8 $6.95

☆ Single concept, PS–3

Peter Rabbit and his friends provide an opportunity for the reader to count from one through twelve. Each number is introduced by having the reader answer a question about the activities of Peter and his friends. On the same page is the numeral and the appropriate number of animals. On the facing page is the number name and a detailed illustration of these animals as they appear in the original illustrations by Beatrix Potter. An appropriate quote from the original story accompanies the illustrations. This is not an introductory counting book because the correct number of characters is often difficult to find in the illustrations from the original text. For this reason, only the competent counter should be given the challenge of this book. Additionally, the end papers showing the numerals 1 through 12 could be confusing because the sketches of the animals are solely decorative rather than related to counting. Questions at the end of the book offer further opportunities for counting. A Spanish edition of *Peter Rabbit's 1 2 3* is also available.

Scarry, Richard. *Richard Scarry's Best Counting Book Ever.* New York: Random House, 1975.
ISBN 0-394-82924-7 $6.95
ISBN 0-394-92924-1 8.99

★★ Single concept, PS–2

Willy Bunny explores numbers 1 through 20 and multiples of 10 through 100. Preliminary addition experiences are included. Willy does not count simply four mouse buses but two red and two yellow mouse buses. This extends the focus of the book beyond counting. Starting with the number 20, the objects to be counted are clustered in groups of five. Colorful, humorous pictures supplement the text as the story unfolds.

Seymour, Peter. *Numbers.* Illustrated by Linda Weller. New York: Macmillan Publishing Co., 1984.
ISBN 0-02-782090-4 $5.95

☆ Single concept, PS–1

This cleverly constructed book uses tabs to move one picture over another picture. On the top of each page is a numeral and number name with the text number named on the bottom of the page. For five, a picture of five rabbits is shown. As the tab is turned, the picture becomes six carrots eaten by five rabbits. *Matching* and *one* *more* are shown, since each rabbit has one carrot except for one rabbit with two carrots. Numbers one through ten are introduced sequentially; two pages give the reader more opportunities to count to determine the number in the set.

Testa, Fulvio. *If You Take a Pencil.* New York: Dial Books for Young Readers, 1982.

ISBN 0-8037-4023-9		$10.95
ISBN 0-8037-0165-9	(paper)	3.95

☆ Single concept, PS–2

Although this book is designated as a counting book, its value lies in the colorful illustrations produced from ink-and-dye paintings. It is a book for a more experienced reader, since the counting often involves partially hidden objects. The illustrations and the story line are fanciful because they come from the ideas one can explore through imagination and drawing. The closing pages are an invitation by the author to explore, through one's own drawing.

Thomson, Ruth. *All about 1, 2, 3.* Illustrated by Martin Ursell. Milwaukee, Wis.: Gareth Stevens, 1987.

ISBN 1-55532-341-3		$8.95
ISBN 1-55532-316-2	(library binding)	

★★★ Single concept, PS–1

Brilliantly colored jungle animals introduce the numbers one through ten. The objects to be counted are almost camouflaged in the lush, intricate jungle surroundings. Questions involve the reader in counting the animals engaged in eating, jumping, flying, and other activities. The questions lead to discriminating and counting a subset of the number being introduced. The simple text presents the numeral and the number word. A chart gives the numeral, the number word, and the corresponding number of animals. The section "Things to Do" suggests further reinforcement of number concepts. The young readers could be challenged to write more "things to do" on their own. A bibliography of additional counting books offers material for future reading and exploration.

van der Meer, Ron, and **Atie van der Meer.** *Fun with Numbers: A Spinning Wheel Book.* New York: G. P. Putnam's Sons, 1990.

ISBN 0-399-21788-6	$5.95

☆ Multiconcept, PS–3

Four different activities are included in this tiny cardboard book designed in a similar format to van der Meers's *Fun with Shapes.* The young reader is asked to spin the wheel and answer the question asked on each opposing page. One activity involves matching sets with the numeral and word name, although the numeral is also given beside each set. Another activity includes one-to-one correspondence. Sums less than five are shown in a contrived activity where objects arranged in addition sentences are to be matched with the appropriate number of fingers being shown on a hand. In the last activity, the reader is asked to change the hands on a clock to indicate the times of participation in events like watching television or eating dinner. The book's spinners and format are well designed, but the quality of the activities varies. The last two pages have a solution key noting the correct matches.

Wahl, John, and **Stacey Wahl.** *I Can Count the Petals of a Flower.* Reston, Va.: National Council of Teachers of Mathematics, 1985.

ISBN 0-87353-224-4 $8.00

☆ Multiconcept, K–4

Colored photographs of flowers clearly illustrate the concepts of one through sixteen in this unique book. The authors have combined a variety of techniques to reinforce number concepts and patterns. Each concept of one through ten is depicted by a photograph of a flower, the appropriate number symbol to identify the number of petals on the flower, and beneath it a simplified abstract sketch of the flower emphasizing the petals only. Subsequent pages count from one through sixteen, featuring single flowers or combinations of flowers whose petals represent the number indicated. An interesting technique deals with prime numbers. If a number is prime, such as 7, one flower is shown; but for 8, which is not prime, there are pictures of an eight-petaled flower, four two-petaled flowers, and two four-petaled flowers. Toward the end of the book, the reader is shown several flower photographs and asked to solve simple counting problems. The reader may be tricked on the last page where she or he is asked, "How many petals do I have?" The five photographs depict plants whose flowers do not have the same number of petals even though they are on the same plant.

Wylie, Joanne, and **David Wylie.** *Cuantos monstruos? Un cuento de números.* Spanish ed. Chicago: Children's Press, 1988.

ISBN 0-516-34494-3 (library binding) $11.93
ISBN 0-516-54494-2 (paper) 3.50

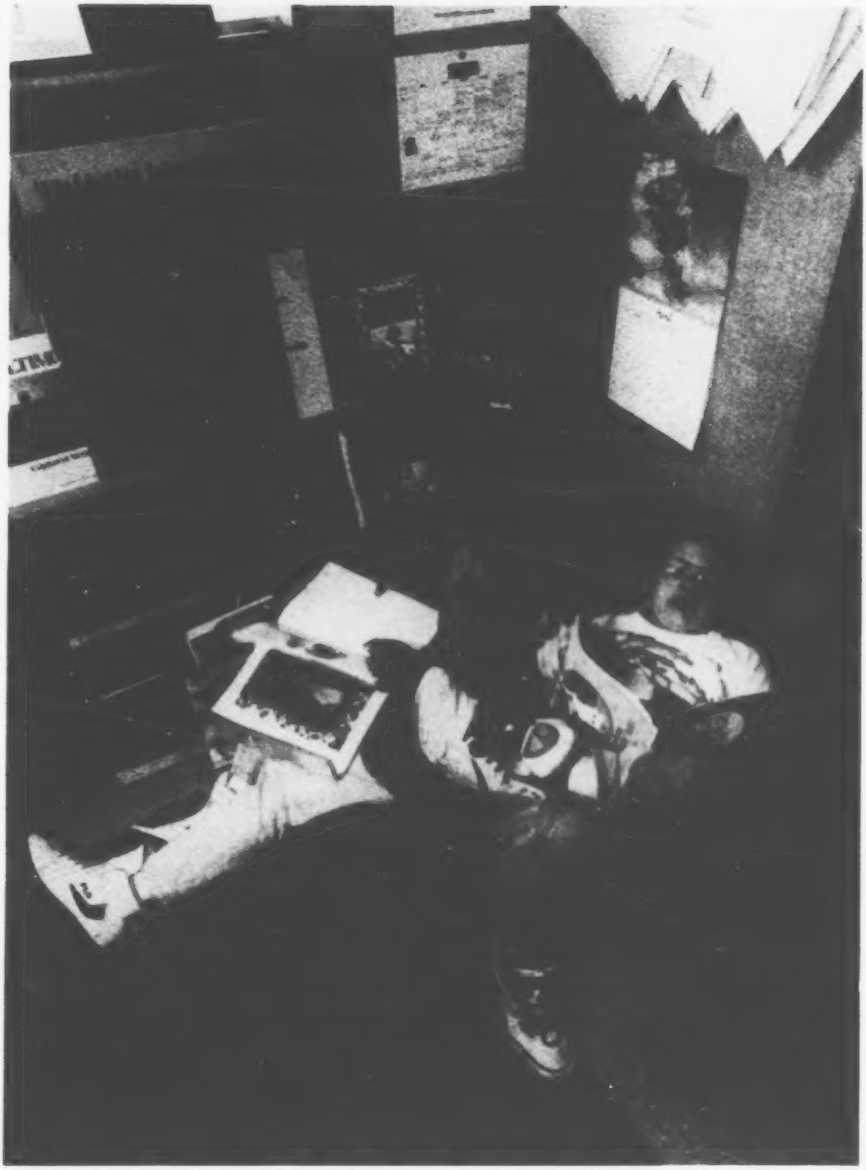
★★ Single concept, PS–2
See next entry for annotation.

____. *How Many Monsters? Learning about Counting.* Chicago: Children's Press, 1985.

ISBN 0-516-04494-X

★★ Single concept, PS–2

Kindergarten children will love to count the zany monsters in this inventive book in the Many Monsters series. However, the young readers must be beyond the rote-counting stage to fully enjoy the challenge of this book. They are asked to discriminate what is to be included before they count what appears on each page. For example, readers are asked to count kneeling monsters only, but some monsters who are not kneeling have bent knees, and youngsters may have difficulty seeing the difference. Answers in numeral form are presented by a tiny monster on each page. The sets to be counted in this unique book are not sequenced, and the questions to be explored are posed in amusing rhymes. The comical characters are depicted in vibrant color to provide a visually pleasing and challenging experience.



Number— Extensions and Connections

WHEN a class of college students were asked to explain what 5! meant, they told how to compute it; that is, 5! is 5 × 4 × 3 × 2 × 1. They could not describe a representation of the concept or give any explanation that indicated a working understanding of the concept other than a vague reference to "Maybe it is used in probability." *Anno's Mysterious Multiplying Jar* was then read to the class. The discussion of the book by these preservice teachers included the quality of the representation of the concept and how they could use the book with their future students. Several students commented that they wished such experiences had been part of their elementary school background. They also expressed a need to have such books shared with them—both for their concept development and for their awareness of what is available for elementary school children.

Sophisticated mathematics is also couched in the context of a problem-solving situation by Mori in *Socrates and the Three Pigs.* Children who organize lists and explore tree diagrams in the situations posed by Mori will experience mathematics concepts in an intuitive informal setting. These experiences should provide a motivation and a stepping stone for children to continue exploring the world of mathematics. The theme in the books by Anno and Mori and the others in this section is exploring number. Some books are appropriate for very young children who are still developing counting skills, but most books introduce young readers to more sophisticated mathematics concepts. This category has seven subcategories. "Number Concepts" contains an extensive group of books that explore number beyond counting but still focus on the concept of number. Cultural and historical connections to numeration systems are the basis of another category, "Number Systems." A third category, "Operations," includes many overlapping ideas about operations: concepts, properties, story problems, and number sense. Connections to the real world through data collection and chance are found in a sizable number of books that form "Statistics and Probability." A fifth category, "Number Theory, Patterns, and Relationships," includes books that explore the patterns and mysteries of number theory and relationships. In the books in "Reasoning—Classification, Logic, and Strategy Games," logical reasoning and classification are explored directly, and those concepts are also found in strategy games. The uses of technology are the basis for the last subcategory in this section, "Technology and Mathematics." Additional classroom vignettes illustrate how some of these books have been used successfully with children.

Number Concepts

The first graders expressed delight and amazement as their teacher, Sue Sherwood, read Schwartz's *How Much Is a Million?* As they talked about the size of numbers, one child asked about the largest number. Two children quickly interjected that there isn't a largest number because there is always a number that is one more. As the children interacted, one could see that at least three first graders were starting to comprehend the concept of infinity.

Whole numbers, common fractions, and integers appear in this exploration of number concepts. Some books on whole numbers focus on how numbers are used for ordering and for naming. Ordinal concepts are illustrated by Hellen in *The Bus Stop,* Hooper in *Seven Eggs,* and Maestro in *Harriet Goes to the Circus: A Number Concept Book;* nominal concepts, or naming, such as telephone numbers, are explored by Pluckrose in *Numbers.* Other connections of number uses in real life are illustrated by Aker in *What Comes in 2's, 3's, and 4's?* and Hughes in *Lucy and Tom's 1, 2, 3.* Refer to the category "Counting—Other Number Concepts" for additional, simpler, books that develop cardinal numbers.

Number sense, including the relative size of numbers, is encountered in many books in this category and in "Counting—Other Number Concepts." Comparison strategies are needed to determine *how many* in Rosenberg's *1 to 100 Busy Counting Book.* Groups of ten, which lead to place-value concepts, are emphasized by Harada in *It's the 0-1-2-3 Book.* Number sense and comparisons for large numbers in the millions, billions, and trillions are illustrated by Schwartz in *How Much Is a Million?* Number concepts are extended to introduce fractions through representations by Dennis in *Fractions Are Parts of Things* and Mathews in *Cluck One* and to integers by Froman in *Less Than Nothing Is Really Something.*

Aker, Suzanne. *What Comes in 2's, 3's, and 4's?* Illustrated by Bernie Karlin. New York: Simon & Schuster, 1990.

ISBN 0-671-67173-1 $13.95

☆ Single concept, PS–K

Eyes, ears, arms, hands, legs, feet, handles on a sink, and pieces of bread for a sandwich are examples given for "What comes in 2's?" The examples throughout the book are familiar and varied. Items to show "three-ness" include traffic lights, wheels on a tricycle, meals each day, and primary colors. In addition to examples that can be observed, such as wheels on a car, the book includes examples of ideas, such as seasons of a year. Colorful illustrations complement a simple text that should motivate the reader to find other things that come in twos, threes, or fours.

Anno, Mitsumasa. *Anno's Math Games II.* New York: Philomel Books, 1989.

See Number Theory, Patterns, and Relationships

Berenstain, Stanley, and **Janice Berenstain.** *Bears on Wheels.* New York: Random House, 1969.

ISBN 0-394-80967-X	$4.95
ISBN 0-394-90967-4	5.99

★★★ Single concept, PS–1

Slapstick humor and outrageous action pervade this "typically Berenstain" book, as bears on unicycles speed across each page. The colorful pictures show such unlikely sights as "two bears on one wheel," "four on one," "two on two," "one on three," and the anticipated "four on none," as the bears crash crazily to the ground.

Berg, Olive S. *I've Got Your Number, John.* Illustrated by Robert and Jack Striwban. New York: Holt, Rinehart & Winston, 1965.

ISBN 4-9772-1515

☆ Multiconcept, 4–6

Numbers are an important part of our lives and are often used for naming (nominal numbers). The author illustrates a few less-noted ways in which children might find numbers used interestingly—licence plates, telephone area codes, and an exploration of the binary number system and its use in the electronic phone system. The text is written in the form of a birthday letter to John, who is 12 years old, or 1100_{two}.

Burns, Marilyn. *Math for Smarty Pants.* Illustrated by Martha Weston. Boston: Little, Brown & Co., 1982.

See Number Theory, Patterns, and Relationships

Clement, Rod. *Counting on Frank.* Milwaukee, Wis.: Gareth Stevens Children's Books, 1991.

See Measurement

Dennis, Richard. *Fractions Are Parts of Things.* Illustrated by Donald Crews. New York: Thomas Y. Crowell Publishers, 1973.

ISBN 0-690-31520-1 OP
ISBN 0-690-31521-X OP

★★ Single concept, 2–5

Halves, thirds, and fourths are introduced as parts of a unit and parts of a set. A shade pulled halfway down, a half glass of water, and six children who can be separated into two groups in different ways are a few of the examples used to illustrate the concept of fractions. A variety of geometric shapes are shaded to represent different fractions. This simple text and appropriate accompanying illustrations introduce fraction concepts; some of the shaded representations become quite challenging.

Froman, Robert. *Less Than Nothing Is Really Something.* Illustrated by Don Madden. New York: Thomas Y. Crowell Publishers, 1973.

ISBN 0-690-48862-9 OP
ISBN 0-690-48863-7

★★ Single concept, 1–5

Negative numbers, or numbers less than zero, are carefully introduced here, thus destroying the myth that numbers begin with one. Using the number line, Froman introduces an interesting game that really explores the concept of negative numbers and offers the challenge of addition and subtraction of negative numbers. Madden's illustrations are particularly supportive of the clearly developed text. Crowell has again published a challenging text that encourages exploration and experimentation in the development of a basic mathematical concept.

Gillen, Patricia Bellan. *My Signing Book of Numbers.* Washington, D.C.: Kendall Green Publications, 1987.

ISBN 0-930323-37-8 $10.95

☆ Single concept, PS+

Number concepts for 1 through 20 and by tens to 100, 1000, and 1 000 000 are presented in full-page, richly colored illustrations. Appropriate number words, numerals, and directions for signing accompany each double-page spread. The directions for signing are compelling. No reader will be able to resist trying them out. The illustrations for the number concepts 11 through 20 are effective but mathematically inconsistent. Some introduce the number in arrays, but others that could, do not. The numbers from 30 to 100 are clearly arranged in rows or groups of ten for ease of counting. Pages 50 through 59 of this interesting and unusual book continue the signing directions for the American Manual Alphabet and some simple and familiar words. Children from various ethnic backgrounds and children with hearing aids or glasses are shown in the illustrations throughout the book.

Harada, Joyce. *It's the 0-1-2-3 Book.* Union City, Calif.: Heian International, 1985.

ISBN 0-89346-252-7 $6.95

★★★ Multiconcept, PS–1

Introductory and end pages present color-coded number charts from 0 to 109 surrounded by sketches of cartoonlike animals using cardinal, ordinal, and nominal situations. The text provides simply a numeral on the left-hand page with an appropriate set of counters, and an action-packed and highly colorful illustration on the opposite page gives opportunities to count various sets. The treatment of 0 is interesting because the winter scene includes a painting of the same scene in spring; as contrast, the winter scene depicts 0 leaves, 0 flowers, 0 birds in the cage, and 0 boots. The counters on the page for 10 are connected and offer an appropriate lead into the subsequent pages in which counters alone represent the numbers for 11 to 20. Each group of ten is clearly defined. Some final comments by the author include suggestions for using the book. The illustrations convey a warmth and charm that set this book apart.

Hellen, Nancy. *The Bus Stop.* New York: Orchard Books, 1988.

ISBN 0-531-05765-8 $11.95

★★ Single concept, PS–1

Clever graphic design, brilliant color, and simple repetitive text support this very British explanation of ordinal numbers, first through sixth. As each different-sized page is turned, a new person is introduced into the growing line. Each introduction is punctuated with "…but can you see the bus yet?" before the next page is turned. Finally, after the sixth, and last, person stands in line, the turned page reveals a bright red bus whose cutout windows land directly over the waiting persons to show them looking out from the bus. This pleasing effect is emphasized by the satisfying ending, "The bus is here at last! Off they go!"

Hooper, Meredith. *Seven Eggs.* Illustrated by Terry McKenna. New York: Harper & Row Publishers, 1985.

ISBN 0-06-022586-6 $3.95

★★★ Single concept, PS–3

Seven unique eggs are effectively displayed on seven pages layered to different lengths. As each page is turned, the reader is introduced to ordinal names and the days of the week: "On Monday the first egg cracked, and out came a baby penguin." As each progressively longer page is turned, the remaining unhatched eggs remain in view. On successive days, a crocodile, an ostrich, a frilled lizard, a turtle, and a barn owl are hatched. The surprise ending on Sunday is in the seventh egg, which contains seven chocolate eggs—one for each baby animal and one for the reader. The simple text enhances the clever layout with charming pastel illustrations.

Hughes, Shirley. *Lucy and Tom's 1. 2. 3.* Markham, Ont.: Viking Kestrel, 1987.

ISBN 0-670-81763-5 $10.95

☆ Multiconcept, no age given

Saturday activities with Lucy, Tom, and their parents introduce a variety of ways that mathematics is used on an everyday basis in an urban setting. Observations are made about pairs, one-to-one correspondence, addition and division concepts, and the role of evens and odds for house numbers. A trip to the grocery store introduces packaging by 1s, 4s, 6s, 10s, 12s, or 100s and 1000s. Measurement is noted because fruits and vegetables are sold by weight, and play experiences compare different capacities and weights. The colorful illustrations support the text in this book about the many uses of number.

Kherdian, David, and **Nonny Hogrogian.** *The Cat's Midsummer Jamboree.* New York: Philomel Books, 1990.

ISBN 0-399-22222-7 $14.95

☆ Single concept, PS–3

Pastel watercolor and pen-and-ink illustrations show the woodland animals in their habitats. The tale begins "There once was a cat / Who loved to sing. / Strumming his mandolin, / He would roam and sing." As the cat journeys, he invites a frog playing a harmonica to join him for a duet. As they continue, they are joined by a fox with a flute, making a trio; a badger with a drum, making a quartet; a skunk with a violin, making a quintet; and a goose playing a bassoon, making a sextet. The group's trip culminates with an invitation to join a racoon with an accordion to form a jamboree high in the tree. The story line with its appealing illustrations is a good introduction to other names for numbers.

Laithwaite, Eric. *Size: The Measure of Things.* New York: Franklin Watts, 1988.

See Measurement

Law, Felicia, and **Suzanne Chandler.** *Mouse Count!* Illustrated by John Farman. Milwaukee, Wis.: Gareth Stevens, 1985.

ISBN 0-918831-88-X (library binding) $9.95
ISBN 0-918831-90-3

★★ Multiconcept, PS–4

Classification, counting, groups of ten, graphing, even and odd numbers, addition, subtraction, multiplication, and division are introduced in special activities and colorful illustrations filled with busy, happy mice. "The Great Mouse Balancing Act" graphically depicts that the next number is one more. Balancing seesaws informally introduce addition concepts. Activities involving sets, arrays, and patterns cleverly illustrate multiplication concepts. Stories about sharing introduce division. Almost every page contains a new activity that introduces or reinforces concepts to engage the reader. Because no topic is treated in depth, the reader should be encouraged to explore the topic further. Parents are given "things to talk about and do" to encourage their children in the storytelling and game-playing that relate to these concepts. Directions are given for fun-filled activities that explore mathematical concepts in a natural way.

Linn, Charles F. *Estimation.* Illustrated by Don Madden. New York: Thomas Y. Crowell Publishers, 1972.

See Measurement

Luce, Marnie. *One Is Unique.* Illustrated by Charles Stenson. Minneapolis, Minn.: Lerner Publications, 1969.

ISBN 0-8225-0572-X $3.95

Multiconcept, 3–6

Though identified in *Children's Books in Print* as appropriate for third to sixth graders, the content and terminology in this book will be unfamiliar to many students in the elementary grades. Additionally, the illustrations are unattractive and in parts are as confusing as the text. The topics discussed are quite abstract; for example, the counting of numbers is introduced by the cardinality of sets. The set with one number is defined as $n(A) = 1$. Other topics similarly discussed include symbol, alternative names, multiplicative identity, reciprocals, division of fractions, set notation, and the concept of infinity.

_____. *Zero Is Something.* Illustrated by Charles Stenson. Minneapolis, Minn.: Lerner Publications, 1969.

ISBN 0-8225-0571-1 $3.95

Multiconcept, 3–6

The historical development of our current numeration system highlighting the introduction of zero and the concept of zero as a place holder, cardinal numbers, additive identities, factors, and integers are topics briefly and abstractly discussed.

McKissack, Patricia C. *A Million Fish ... More or Less.* Illustrated by Dena Schutzer. New York: Alfred A. Knopf, 1992.

ISBN 0-679-80692-X $14.00
ISBN 0-679-90692-4 (library binding)

☆ Single concept, PS–3

Papa-Daddy and Elder Clapateaux spin yarns of strange happenings in the Bayou Clapateaux, including the sighting of a huge turkey and an old lantern. When young Hugh Thomas asks if the turkey *really* weighed 500 pounds or the lantern *really* burned for

350 years, the elderly men simply wink and answer, "More or less." These thoughts are foremost in Hugh's mind as he sets out for fishing in the bayou. At first he catches only 3 fish, but within a half-hour, he has caught 1 million fish. As he carries the fish out of the bayou, he encounters one mishap after another. One hundred gators demand half the fish, an army of raccoons abscond with half of what is left, and so on. When Hugh finally reaches the houseboat, he has 3 fish left. He sits down to tell his tale of catching 1 million fish—more or less. Number concepts are woven throughout the tale as the reader ponders what is reasonable. The telling of the story and the primitive paintings reflect the culture of African-Americans living in the bayou country.

McMillan, Bruce. *Eating Fractions.* New York: Scholastic, 1991.
ISBN 0-590-43770-4 $13.95
★★ Single concept, PS–2

Wholes, halves, thirds, and fourths are the number concepts simply introduced in color photographs. A close-up of one whole banana is followed by a sequence of pictures showing the banana cut into two pieces and the halves being shared between two friends. The simple text includes both the word name and the numeral; for the banana, "whole," "1," "halves," and "1/2" are introduced next to drawings outlining the whole and the halves. A whole muffin is shown being divided into three pieces; the photographs and the diagrams clearly show three thirds making a whole. All the examples are food, as the title suggests. The author's recipes for the rolls, pizza, salad, and pie appear at the end of the book, encouraging the reader to participate in extension activities that use the concepts explored. The two friends reflect a multicultural setting—one child is white; one is African-American.

____. *One, Two, One Pair!* New York: Scholastic, 1991.
ISBN 0-590-43767-4 $12.95
☆ Single concept, PS–2

Socks, shoes, shoelaces, mittens, and ice skates are some of the pairs introduced in this photographic essay reflecting winter scenes. Each object in a pair is shown in a separate photograph on the left-hand page; a larger photograph on the opposite page shows the pair. The minimal text repeated throughout the book is simply "one, two, one pair." Patterns can be detected, as in the sequence from bare feet to socks to shoes. The colorful photographs of the activities of the twins, Jessica and Monica, are appealing. This simple concept book is an effective introduction to the concept of pairs.

Maestro, Betsy. *Harriet Goes to the Circus: A Number Concept Book.* Illustrated by Giulio Maestro. New York: Crown Publishers, 1977.
ISBN 0-517-52844-4 (library binding) $12.95
ISBN 0-517-55303-1 (paper) 2.50
★★★ Single concept, PS–1

Large, expressive illustrations introduce the concept of the ordinal numbers, first through tenth. The reader will sympathize with Harriet, an elephant, who goes early to the circus to be first in line only to find that a different door opens and that she is last, or tenth, in the line of animals waiting to see the show. The story ends on a happy note with all ten animals sitting around the circus ring that has no beginning or end point and therefore no first or last position. This book vividly shows the importance of knowing the beginning point before counting with ordinal numbers. There are several opportunities for the reader to participate, using ordinal names.

Mathews, Louise. *Cluck One.* Illustrated by Jeni Bassett. New York: Dodd, Mead & Co., 1982.

ISBN 0-396-08029-4 OP

★★ Single concept, no age given

Mr. and Mrs. Cluck, their barnyard friends, and a weasel are the players in this humorous story introducing the first six ordinal numbers. Mr. Cluck is proudly anticipating a baby rooster from their first egg. When a cuckoo, under the darkness of night, places a second egg in the nest, the weasel concocts a scheme to fill the nest with a variety of eggs. As each new egg is introduced into the nest, a chart at the bottom of the page shows its position in relation to the other eggs. This delightful story is a good introduction to the concept of ordinals, their names (second), and their numerals (2nd).

_____. *Gator Pie.* Illustrated by Jeni Bassett. New York; Dodd, Mead & Co., 1979.

ISBN 0-396-07694-7	$6.95

★★★ Single concept

Alvin, Alice, and other alligators inhabit this delightful book on beginning fraction concepts. Alvin and Alice decide to share a pie they find in the woods. But before they can cut it, other alligators arrive; so they need to consider cutting the pie in thirds, fourths, eighths, and finally, hundredths, when a whole army arrives. Each new situation in the well-written text includes graphic models; " 'Three gators,' gulped Alice, 'That means three pieces.' 'Cut three one-thirds,' muttered Al," as a circular model of the pie is shown cut into three equal pieces. The detailed illustrations of the main characters and other woodland creatures humorously complement the story line.

Moncure, Jane Belk. *How Many Ways Can You Cut a Pie?* Illustrated by Linda Hohag. Chicago: Children's Press, 1988.

ISBN 0-516-05732-4	$11.93
ISBN 0-516-45732-2 (paper)	

★ Single concept, PS–2

Squirrel made a scrumptious acorn pie to enter in the pie contest. Mouse wanted her to cut it in half so they could each have a piece, but Squirrel said she'd share it *after* the contest. Frog wanted her to cut it into three pieces, but Squirrel said she'd share it later. To the three friends' dismay, Pig, the judge for the contest, ate the whole pie! A satisfying solution is found to the problem when another scrumptious pie is cut in four pieces for each of the four characters to have a fair share. A double page shows diagrams of the different ways to share Squirrel's pie. No mention is made in the text of *equal* parts, though the illustrations clearly depict that. The pie diagrams show as many as eight pieces. The numeral form of fractional names is inappropriately introduced by writing—

$$\frac{1 \text{ pie in}}{3 \text{ pieces,}}$$

a format that does not reflect part-whole concepts.

_____. *My Eight Book*. Illustrated by Linda Hohag. Elgin, Ill.: Child's World, 1986.

ISBN 0-89565-319-2 $7.45

☆ Single concept, PS–2

My Eight Book offers a brief opportunity for the reader to reinforce understanding of one-to-one correspondence in counting to eight before being challenged to count two brown, two black, and four white goats to find out how many there are altogether. Subsequent challenges call for the reader to explore various partitions of eight.

Each book in this series focuses on one of the numbers one through ten. Depending on the book, the main characters are children named One, Two, Three, ..., Ten with the appropriate word name and set of counters imprinted on their clothes. Each individual lives in a house with a corresponding number of rooms. The story line of each book involves readers in counting numerous sets; at various times they are asked to count events such as claps, hops, and yawns or to imitate the sounds of animals such as a chicken or a dog. One-to-one correspondence is clearly shown in the counting process throughout the series. Addition and subtraction combinations are introduced through challenging problems posed in pictorial and written form. The growing complexity of the problems as the series progresses from one to ten suggests the need for thoughtful interactions between adult and child. In the first books of the series, the problems can be answered by counting; in the later books, the problems will need to be acted out to ensure comprehension. The last page of each book gives step-by-step instructions for writing the numerals and number names featured in the specific story. Though no prior introduction is made to the concepts or words of *plus*, *minus*, or *equals*, these symbols are used toward the end of each book in number sentences that combine both symbols and pictorial representations. The pictures do not convey the action or the operation. It would be better to ignore these pages and spend time acting out the situations.

_____. *My Five Book.* Illustrated by Linda Hohag. Elgin, Ill.: Child's World, 1985.

ISBN 0-89565-316-8 $7.45

☆ Single concept, PS–2

See the annotation for *My Eight Book* for an overview of this series.

_____. *My Four Book.* Illustrated by Linda Hohag. Elgin, Ill.: Child's World, 1985.

ISBN 0-89565-315-X $7.45

☆ Single concept, PS–2

The emphasis is on one-to-one correspondence and partitions of four in this book; the setting for these counting explorations is the zoo. See the annotation for *My Eight Book* for an overview of this series.

_____. *My Nine Book.* Illustrated by Linda Hohag. Elgin, Ill.: Child's World, 1986.

ISBN 0-89565-320-6 $7.45

☆ Single concept, PS–2

Ordinal numbers first through ninth are introduced as Little Nine finds spaceships for each of his astronaut friends. On the way to the parade, he sees nine drummers who march through a covered bridge. Three are shown coming out of the bridge, and the last two are ready to enter. "How many are inside the bridge?" is asked. This is an example of a problem that may need to be acted out. See the annotation for *My Eight Book* for an overview of this series.

_____. *My One Book.* Illustrated by Linda Hohag. Elgin, Ill.: Child's World, 1985.

ISBN 0-89565-312-5 $7.45

☆ Single concept, PS–2

Readers are encouraged to hop one hop, jump one jump, and clap one clap as they are introduced to Little One and his day's adventure. The simple text encourages participation and could be enjoyed by parents and tots together. See the annotation for *My Eight Book* for an overview of this series.

_____. *My Seven Book.* Illustrated by Linda Hohag. Elgin, Ill.: Child' s World, 1986.

ISBN 0-89565-318-4 $7.45

☆ Single concept, PS–2

Little Seven's introduction to his seven-room house furnishes the usual brief opportunity to reinforce one-to-one correspondence in counting. Subsequent pages explore partitions of seven. A more difficult concept is introduced as a seven-car train makes its way through a tunnel. "Three cars come out. How many are left?" This is the first time in the series that there are no visible objects to count in order to answer the question. Another potential difficulty occurs when seven cents, represented by a nickel and two pennies, is offered as an example of the concept of seven. This seems totally confusing for the level toward which this series of books appears to be directed. See the annotation for *My Eight Book* for an overview of this series.

_____. *My Six Book*. Illustrated by Linda Hohag. Elgin, Ill.: Child's World, 1986.

ISBN 0-89565-317-6 $7.45

☆ Single concept, PS–2

Walk through the woods with Little Six and explore the concept of six and its partitions. The ordinal numbers first, second, and third are introduced. An opportunity to count by twos is provided. See the annotation for *My Eight Book* for an overview of this series.

_____. *My Ten Book*. Illustrated by Linda Hohag. Elgin, Ill.: Child's World, 1986.

ISBN 0-89565-321-4 $7.45

☆ Single concept, PS–2

Little Ten enjoys planning the year's holiday surprises for her ten little robot dolls. While doing so she involves the reader in several interesting challenges. "First she makes six valentines. How many more does she need?" "She makes green shamrocks for her doll's hats. She paints five. How many more does she need?" Another advanced concept introduced in this last book in the series is cutting five sandwiches in half to get ten pieces. See the annotation for *My Eight Book* for an overview of this series.

_____. *My Three Book*. Illustrated by Linda Hohag. Elgin, Ill.: Child's World, 1985.

ISBN 0-89565-314-1 $7.45

☆ Single concept, PS–2

Little Three meets many familiar storybook friends—the Three Bears, Three Billy Goats, and Three Blind Mice. Each has problems that Little Three helps them solve. Ordinal numbers first through third are used in two different settings. See the annotation for *My Eight Book* for an overview of this series.

_____. *My Two Book.* Illustrated by Pam Peltier. Elgin, Ill.: Child's World, 1985.

ISBN 0-89565-313-3 $7.45

☆ Single concept, PS–2

Follow Little Two through a day of activity as she interacts with different animals in sets of two. See the annotation for *My Eight Book* for an overview of this series.

Myers, Bernice. *The Millionth Egg.* New York: Lothrop, Lee & Shepard Books, 1991.

ISBN 0-688-09886-X
ISBN 0-688-09887-8 (library binding)

☆ Single concept, K–3

Monica, Margaret, Mila, and Rhoda are some of the chickens who are the main characters in a humorous plot about the millionth egg and saving the barn. The narrative and comments by the hens are interspersed among the illustrations drawn in cartoon fashion. The millionth egg is not the main story line but a sideline. At the story's beginning, 999 996 eggs have been laid; so 4 more are needed to make 1 000 000. As more eggs are laid, the increasing numerals are noted. Other number concepts, such as a mile of crepe paper, 1000 balloons, and 105 gallons of punch, are incidental.

My First Look at Counting. New York: Random House, 1991.

ISBN 0-679-81163-X $6.95

★★ Single concept, PS–K

Colorful close-ups of familiar objects photographed on a white background effectively illustrate this book, which is part of the My First Look at … series. Simple questions let the reader use counting to solve the problems on each page. An opening layout shows different pieces of fruit carefully arranged in columns from the least to the most with the numerals from 1 through 10 recorded below each column. On a page showing toy cars, the reader is asked to count the red cars, the blue cars, and then all the cars. Other pages also require discrimination and then counting as the reader is asked to count the round things and then the square things. On one double-page layout, the reader is asked to count apples. One page shows six apples; the photograph on the next page clearly depicts two more apples being added to the original set. Another counting activity clearly shows a take-away situation. The young reader will encounter many well-designed activities clearly illustrated and accompanied by a simple text.

O'Halloran, Tim. *Know Your Numbers.* Burlington, Ont.: Hayes Publishing, 1983.

ISBN 0-88625-045-5 $10.95

★★ Multiconcept, PS–2

Action-packed, humorous, detailed illustrations make this a book to pore over time and time again. Each look will bring another surprise. The rhyming text takes the reader on an exploration of one through twenty in zany situations featuring tinges of subtle humor. An opportunity to test counting skills comes first in the unlikely situation of an expanding moose band and the second in a wild scene of monkey firefighters responding to a call. In two situations, the reader is asked to compare pictures to determine whether the rearrangement of objects affects the number of objects. The text then challenges children to use counting or one-to-one correspondence to discern whether there are more, fewer, or just enough to go around in a variety of funny situations featuring rattles for babies, bedrolls for campers, and pies for pigs. Ordinal numbers, simple addition and subtraction, measurable attributes, shapes, and measurement of time are all presented in the same humorous way but not in enough depth to warrant crossreferencing.

Parker, Tom. *In One Day*. Boston: Houghton Mifflin Co., 1984.

See Statistics and Probability

Pluckrose, Henry. *Numbers*. Illustrated by Chris Fairclough. New York: Franklin Watts, 1988.

ISBN 0-531-10453-2	$9.90

★★★ Single concept, PS–2

"Can you imagine a world without numbers?" This book is designed to encourage young children to talk about the many uses of numbers. The full-page color photographs and the corresponding text provide interesting and meaningful real-life contexts for this discussion. The uses of number (ordinal, nominal, measurement) include such examples as the numerals on a telephone, the buttons for elevator floors, streetcars, a car license plate, house numbers, a wristwatch, a thermometer, and a speedometer. Pluckrose and Fairclough offer a rich variety of illustrations for the young reader, although most depict the experiences of middle-class children. Those guiding the discussion should provide opportunities for children to develop awareness of how numbers are used in their own life experiences.

Robinson, Shari. *A First Number Book*. Illustrated by Sal Murdocca. New York: Grossett & Dunlap, 1981.

ISBN 0-448-13922-7	(library binding)	$11.85
ISBN 0-448-47335-6	(paper)	3.95

★★★ Multiconcept, K–4

Cardinal numbers, ordinal numbers, introduction to sets, zero, sequence counting, addition, subtraction, multiplication, division, and base-ten numeration are all presented in a dynamic, easy-to-understand way in this humorously illustrated book, which is inappropriately titled *A First Number Book*. The discussion of subtraction concepts is limited to "take away," although comparison situations are shown later. Similarly, the discussions and examples for division are restricted to partitive situations. In spite of these limitations, the book is highly recommended. Even adults will enjoy perusing this fun-filled book.

Rosenberg, Amye. *1 to 100 Busy Counting Book*. Racine, Wis.: Western Publishing Co., 1988.

ISBN 0-307-10510-5		$4.95
ISBN 0-307-60520-5	(library binding)	

★★ Single concept, K–1

Rhyming text in this brightly colored "counting" book introduces the numbers 1 to 100. Whether it is a one- or two-page spread, each illustration involves counting more than one set of things that are not always isolated groups. Frequently, the humorous illustrations become "busy," and counting the sets would be tedious. For example, the caption for one double-page spread is "**41** sunglasses, **42** toy boats, **43** otters bob on **44** floats." Forty-three unique otters are resting and frolicking on all but one float; two otters are without sunglasses. Rather than counting each set, the reader often can use discrimination skills, one-to-one correspondence, and one-more-than and one-less-than comparisons to determine the number in the set. A strength of this book lies in its representation of large numbers.

Schwartz, David M. *How Much Is a Million?* Illustrated by Steven Kellogg. New York: Lothrop, Lee & Shepherd Books, 1985.

ISBN 0-688-04049-7		$15.00
ISBN 0-688-04050-0	(library binding)	14.88
ISBN 0-590-33966-4	(paper) (Scholastic, 1986)	2.50

★★★ Single concept, K–5

Marvelosissimo, the Mathematical Magician, introduces his eight friends (four children and four animals) to the magnitude of large numbers through thought-provoking situations. The detailed pastel drawings clearly complement the clever fantasy examples used to introduce 1 million, 1 billion, and 1 trillion. Four different situations illustrate the enormity of 1 million: finding how high a column of 1 million children standing on each other's shoulders would reach, finding how long it would take to count to a million, finding a bowl large enough to hold a million goldfish, and finding how many pages in the book it would take to hold a million stars. These examples are modified and extended to show 1 billion and 1 trillion. Of particular interest is a three-page note from the author that explains how he generated the data used in the examples. Middle-grade children will enjoy the challenge of estimation and the calculation of similar activities for numbers of their own choice. This excellent book can be appreciated by readers of any age. A companion teacher's guide is available from the publisher.

Sis, Peter. *Going Up! A Color Counting Book.* New York: Greenwillow Books, 1989.

ISBN 0-688-08125-8
ISBN 0-688-08127-6 (library binding)

☆ Single concept, PS+

Against the gray pen-and-ink illustration of a city skyline, watercolor paints focus the reader's attention and present an element of intrigue. The opening double-page layout shows a young girl in front of a flower shop. Nearby, all the floors of a twelve-story hotel, except the bottom and top floors, are colorfully lighted, and the text warns mysteriously that everyone is getting ready. Mary takes the elevator from the first floor and is joined at each subsequent floor by an unusually costumed person. Everyone gets off at the twelfth floor, where the mystery is solved—a surprise birthday party is revealed. The final scene in the story shows the gray pen-and-ink illustration of the city skyline, but this time the only floor in the building with bright lights is the twelfth! Although the story itself is one that young children will enjoy, each colorful layout shows only the increasingly crowded elevator. The reference to the main floor as the first, the one where the series begins, is lost. With adult direction the reader could reexplore the concepts of 1st, 2d, and so on, by discussing what is depicted on the end pages. Children could ask their own questions to check their classmates' understanding of ordinal numbers in a review of the story.

Sitomer, Mindel, and **Harry Sitomer.** *Zero Is Not Nothing.* Illustrated by Richard Cuffari. New York: Thomas Y. Crowell Publishers, 1978.

ISBN 0-690-03829-1 $12.89

★★ Single concept, 1–3

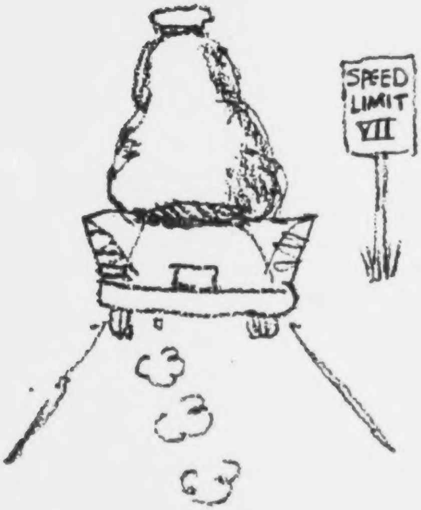
Zero's special role in mathematics, history, and current society is noted throughout this book. In addition to indicating "how many," zero's role as a starting point is illustrated through such examples as the beginning of a race and the beginning point on any measurement scale. Zero is presented as a separation point in rocket countdowns and in the Celsius temperature scale. Good explanations are also given of its role in place value: historical connections are made to soldiers in Madagascar and the Hindus in India. The black-and-white drawings complement the text and reflect an awareness of the importance of minority representation. Typical of the Sitomers' collaborative efforts in sharing mathematical concepts with children, this exploration of the importance of zero is clearly presented in a style that encourages participation in developing in-depth understanding of the concept.

Zaslavsky, Claudia. *Count on Your Fingers African Style.* Illustrated by Jerry Pinkney. New York: Thomas Y. Crowell Publishers, 1980.

See Number in Other Cultures

_____. *Zero: Is It Something? Is It Nothing?* Illustrated by Jeni Bassett. New York: Franklin Watts, 1989.

See Number Systems



Number Systems

Are you about 1100 years old? This question was posed to seventh graders in a small town in southern Illinois. To furnish information to help students answer the question, Watson's *Binary Numbers* was read. They soon were predicting and estimating the number of pieces of grain and the lengths of a string as they imagined the repeated doubling of both of these quantities. One activity with Cuisenaire rods was acted out. Within ten minutes of the initial question, the students had cracked the code of base-two numeration and were busy exploring how to write other base-ten numbers in this format.

Whether exploring base two with Watson in *Binary Numbers* or base five with Adler in *Base Five*, students will develop a better understanding of their own numeration system as they explore the ideas in these books. An introduction to finite number systems can be explored in Weiss's *Solomon Grundy, Born on Oneday;* the author builds in connections between finite arithmetic and its use, in familiar real-life situations. Historical connections, both real and fanciful, are described in Fisher's *Number Art: Thirteen 1 2 3s from around the World*, Leighton and Feynman's *How to Count Sheep without Falling Asleep*, the Sitomers' *How Did Numbers Begin?*, and others. These narratives convey a strong sense of the evolution of number and numeration systems and the role of zero.

Adler, David A. *Base Five.* Illustrated by Larry Ross. New York: Thomas Y. Crowell Publishers, 1975.

ISBN 0-690-00668-3 OP
ISBN 0-690-00669-1 OP

★★★ Single concept, K–3

The origin of our base-ten system is probably related to counting on our fingers. This well-written text first explores the concept of place value using base ten, as the readers are encouraged to count objects in groups of ten and remaining units. After readers review this concept, they are introduced to the idea of grouping in fives with the familiar tally 卌. This introduces base five. Many opportunities are then provided to record numbers using the base-five system. Two nickels and three pennies, written 23_{five}, is the effective example using money to illustrate the base-five system. The drawings are effective in complementing this interesting and thought-provoking text.

_____. *Roman Numerals.* Illustrated by Byron Barton. New York: Thomas Y. Crowell Publishers, 1977.

ISBN 0-690-01302-7 $12.95

★★★ Single concept, K–3

Children of any age are encouraged to accept this compelling invitation to explore the meaning and use of roman numerals. The invitation comes from a thoughtful Roman stonecutter who presents a conversational, but clear and concise, explanation of how the roman numeration system works. The invitation to think through, and participate in, a variety of activities becomes more tempting as the illustrations involve the reader in a logical presentation of what is described in the text.

Berg, Olive S. *I've Got Your Number, John.* Illustrated by Robert and Jack Striwban. New York: Holt, Rinehart & Winston, 1965.

See Number Concepts

Carona, Philip. *Numbers.* Chicago: Children's Press, 1982.

ISBN 0-516-01634-2 $11.67
ISBN 0-516-41634-0 (paper) 3.95

☆ Multiconcept, K–4

Interesting historical facts about numerals, place value, and number use add a refreshing, humanistic perspective to an otherwise didactic presentation of the numeration system. This volume explains mathematics in a multicultural setting rather than the ethnocentric context to which we are accustomed. Nevertheless, the introduction of Egyptian, Chinese, roman, Mayan, and other numeration systems gives the readers such a diverse background that they may have difficulty comprehending it. Carona has included a glossary and an index to make the 46-page book more manageable and readable. Photographs and illustrations are adequate and complement the text.

Dilson, Jesse. *The Abacus: A Pocket Computer.* Illustrated by Angela Pozzi. New York: St. Martin's Press, 1968.

ISBN 0-312-00140-1 $ 6.95

☆ Single concept, 5–8

Quotations from *Alice's Adventures in Wonderland* introduce each chapter in this 143-page book that explores numeration and operations through the Chinese abacus. Properties of different numeration systems are explored in examples from the Babylonian, Egyptian, roman, decimal, and binary systems. The abacus is introduced as a computing device that was used in ancient times as well as in Asian countries today. Problems using each of the four operations are illustrated in black-and-white diagrams and accompanying text; in later chapters, the examples become increasingly complex as operations involving larger numbers are solved. Compensation is involved in many examples: in order to subtract six, ten is subtracted and four is added; two fives are traded for a ten. Comparisons are also made between the abacus and the modern-day computer.

Fisher, Leonard Everett. *Number Art: Thirteen 1 2 3s from around the World.* New York: Four Winds Press, 1982.

ISBN 0-590-071810-0 $12.95

☆ Single concept, 3–7

The history and development of thirteen number systems are presented: Arabic, Armenian, Brahman, Chinese, Egyptian, Gothic, Greek, Mayan, Roman, runic, Sanskrit, Thai, and Tibetan. As each number system is presented, its history, cultural impact, development, and use is discussed. Additionally, the actual symbols (numerals, letters, or characters) of the system are presented. Within the descriptions, the author includes cross-references to the influences of other cultures discussed in the book. The reader should appreciate the gradual evolution of our current system and the interrelatedness of our world cultures. The book is visually pleasing; graceful illustrations in blue and white complement this informative and interesting text.

Leighton, Ralph, and **Carl Feynman.** *How to Count Sheep without Falling Asleep.* Illustrated by George Ulrich. Englewood Cliffs, N.J.: Prentice-Hall, 1976.

ISBN 0-13-404459-2 OP

★★ Single concept, 3–6

Tongue-in-cheek humor in the text and illustrations enhances a fictitious account of how our number system developed. An imaginary shepherd attempts to keep track of his sheep and in doing so illustrates the properties of our number system: base ten, place value, zero as a place holder, and renaming. The first pages are numbered using only two symbols. The confusion this causes becomes obvious and clearly illustrates the inappropriateness of such a system. It isn't until page 24, where arabic numerals are discussed, that arabic numerals are used to number the pages. Until that page, the page numbers reflect the number system addressed in the text on that page.

Sitomer, Mindel, and **Harry Sitomer.** *How Did Numbers Begin?* Illustrated by Richard Cuffari. New York: Thomas Y. Crowell Publishers, 1976.

ISBN 0-690-00794-9 $12.89

★★★ Single concept, K–3

What would it have been like to live a long time ago, before the development of our number system? How would you count? The Sitomers explore the possibilities—one pebble for one sheep, perhaps. Matching games are used to explore the concepts of *as many as, less than,* and *more than.* The concept of naming numbers is presented, including interesting information about the origins of *two* (Tibetan for "ears"), *five* (hand), *eleven* (one left over when counting in tens), and *twelve* (old German word—*zwo-lif*—meaning two and ten). Ordering and counting are introduced as essential in the development of our number system. The authors and illustrator have cooperated effectively in their compelling exploration of the number system from prehistory to today.

_____. *Zero Is Not Nothing.* Illustrated by Richard Cuffari. New York: Thomas Y. Crowell Publishers, 1978.

See Number Concepts

Watson, Clyde. *Binary Numbers.* Illustrated by Wendy Watson. New York: Thomas Y. Crowell Publishers, 1977.

ISBN 0-690-00993-3 $12.89

★★★ Single concept, 1–4

Whimsical illustrations in black, white, and red present the antics of charming little animals who clarify the actions and activities defined by the text. The idea of doubling a length of string until you have enough to go around the world or reach to the moon is used to develop a chart to introduce the binary number sequence. The delightful animals teach the reader. Through conversational text, they talk the reader through writing numbers in the binary number system, writing binary numerals, and writing messages in a simple binary-numeral code. A brief discussion of the importance of the binary-numeral code for computer work is included. The large print and humorous illustrations may mislead the reader into believing this is a book for the young child, but the topic, developed in an interesting and clear way, is suited to the more mature reader.

Weiss, Malcolm E. *Solomon Grundy, Born on Oneday: A Finite Arithmetic Puzzle.* Illustrated by Tomie de Paola. New York: Thomas Y. Crowell Publishers, 1977.

ISBN 0-690-01275-6 $12.89

★★★ Single concept, K–3

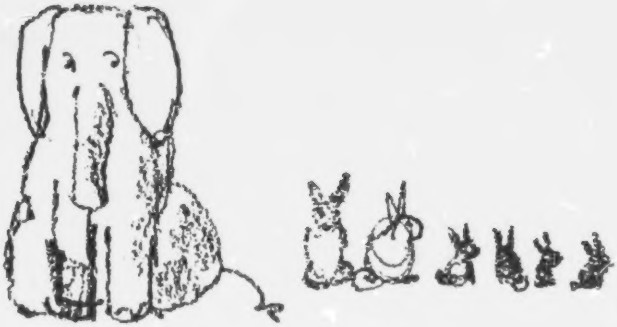
"Solomon Grundy, / Born on Monday, / Christened on Tuesday, / Married on Wednesday, ..."—this familiar Mother Goose rhyme introduces a finite arithmetic puzzle. To answer the question of whether poor Solomon Grundy was really buried a week after his birth, the cyclic nature of the days of the week is explored. Patterns such as "three weeks from Tuesday it will again be Tuesday" are related to finite arithmetic with a cycle of seven. A paper plate can be divided into seven parts and labeled with the days Sunday through Saturday and the numbers 1 through 7. Addition using the "week clock" is compared to ordinary arithmetic addition. Other applications of finite systems, such as the twelve-hour clock and the seasons of the year, are mentioned. Simple illustrations complement the well-written story. The grade levels indicated by the publisher should be extended.

Zaslavsky, Claudia. *Zero: Is It Something? Is It Nothing?* Illustrated by Jeni Bassett. New York: Franklin Watts, 1989.

ISBN 0-531-10693-4

★★★ Single concept, 1–4

Zero, with its unique properties and uses, is the focus of this simple text with accompanying questions and illustrations. Zero's role in meaning *nothing* or *none at all* is followed by its role in meaning *something* in place value. But the 0's on an odometer may or may not mean something, depending on their position. Other topics include zero's role in round numbers and measures, and ways to write it from historical times to the computer. Excellent illustrations are given for the unique properties of zero with regard to the four operations.



Operations

Developing the concept of an operation is the focus of most books in this category. Butler's *Too Many Eggs,* Mathews's *Bunches and Bunches of Bunnies,* and Moerbeck and Dijs's *Six Brave Explorers* use fantasy stories and illustrations to introduce operation concepts; Froman's approach in *The Greatest Guessing Game: A Book about Dividing* is to connect the concepts to "real life" situations; whereas Burningham's *Pigs Plus* and *Ride Off* simply use pictures and ask the reader to tell the story. These types of books could lead children to write or tell their own stories and share them with their classmates. In most books, the reader is to count or act out the situation using models to solve the problems; in Brown's *Little Simon 1, 2, 3,* the reader is asked to identify and then count disjoint sets to explore addition; in Butler's *Too Many Eggs,* counters allow the reader to act out the story. Number sentences are included in some books, although there is no attempt to explain the operation or equals symbols. Mental computation and estimation are included in some examples. Operations using larger numbers are often embedded in trick problems or restricted to the books using calculators or computers. Activities involving order of operations are included in books such as Adler's *Calendar Fun* and Trivett's *Building Tables on Tables: A Book about Multiplication.* The unique operation properties of one and zero are explored in the book by Adler and in Zaslavsky's *Zero: Is It Something? Is It Nothing?*

Adler, David A. *Calculator Fun.* Illustrated by Arline and Marvin Oberman. New York: Franklin Watts, 1981.

ISBN 0-531-04306-1 OP

★★ Single concept, no age given

Whimsical illustrations add interest to this beginning calculator book but on occasion are mixed with the text in a contrived manner. Concise instructions appear on how to use the digit, operation, and clear keys and how to read calculator codes. Chains of operations are explored by having the reader solve chains that all equal zero, but parts of some chains are almost lost in the book's binding. Calculator riddles where the answer is found by reading the display upside down are included. The sections on chains and riddles are very straightforward, but they could be extended mathematically by having readers create their own chains and riddles. Activities on number theory are very well done; the reader is asked to explore generalizations about operations on odd and even numbers, division by 9, multiplication by 0, and the doubling function. Readers should enjoy the interesting games involving mental computation, estimation, and number and operation sense.

Anno, Masaichiro, and **Mitsumasa Anno.** *Anno's Mysterious Multiplying Jar.* Illustrated by Mitsumasa Anno. New York: Philomel Books, 1983.

See Number Theory, Patterns, and Relationships

Bambi's First Counting Book. Illustrated by Frank Daniel. Teaneck, N.J.: Sharon Publications, 1981.

ISBN 0-89531-109-7 $4.95
ISBN 0-686-79399-4 (paper) 1.95

Multiconcept, K–1

Developing counting skills from one through twenty, numeral recognition, and addition appear to be some of the purposes of this book. However, the author presents the concepts in a very ambiguous, confusing way. For example, for the numeral 1, one o'clock is mentioned. To represent 2, the pig wears two watches, but the two watches are lost in the busy illustration. Number sentences appear on most, but not all, the pages; for some examples, such as 13 + 3 = 16, what sets are being considered is unclear. The story plot is very fragmented and contrived to work in a different number for each page. Busy illustrations, alternating between black and white and color, do nothing to clarify the confusion that prevails in this book.

Belton, John, and **Joella Cramblit.** *Domino Games.* Milwaukee, Wis.: Raintree Publications, 1976.

See Reasoning—Classification, Logic, and Strategy Games.

Brown, Mik. *Little Simon 1, 2, 3.* New York: Little Simon, 1982.

ISBN 0-671-45045-X

★★ Multiconcept, K–2

Colorful, whimsical cartoon animals introduce the numbers one to ten through humorous illustrations showing such ridiculous situations as "three crocodiles in canoes" and "five tigers playing tunes." Across the bottom of each layout is the number word name and the appropriate number of miniature animal counters. The counting games in the book's second section informally introduce the reader to beginning addition concepts. Questions such as "How many of these leopards have spots?" "How many have no spots at all?" and "How many leopards are there all together?" are posed to the reader. All the examples can be solved by counting and involve situations in which one of the addends is 1. Summary statements like "1 leopard and 6 leopards together make 7 leopards" are written in a format similar to number sentences; the order of the recording varies. The last pages present more opportunities to count; the reader needs to search to count the one kangaroo, two mice, ..., six lions, seven snakes, ..., and ten monkeys.

Bruna, Dick. *I Know More about Numbers.* Los Angeles: Price/Stern/Sloan Publishers, 1981.

ISBN 0-416-20870-3 $2.95

☆ Single concept, K–1

Simple line drawings with strong color illustrate familiar sets of objects on one page. On the opposite page, an addition number sentence that is representative of the illustration appears. Some sentences are clearly shown by effective use of color or by a clear grouping of the objects. In other illustrations, the parts that make up the sum are not clearly defined.

Burningham, John. *Pigs Plus.* New York: Viking Press, 1983.

ISBN 0-670-55508-8 OP

★★ Single concept, PS–1

Simple addition concepts and sentences are used to describe the mishaps that occur when an old jalopy and its driver make an eventful trip. Each event sets the stage for another pig to join the driver until finally, the load is too great and the car collapses. Each mishap is a separate little story told in three foldout pages. The first page shows the distressed riders and an appropriate numeral, the second page shows one pig to the rescue with a "+1," and the last page shows the pigs with the problem solved with an equals symbol and the appropriate sum. This book is part of a series of six sturdy cardboard, foldout books. Since there is no text, the reader can make up stories to match the number sentences and the simple, pleasing illustrations.

_____. *Ride Off.* New York: Viking Press, 1983.

ISBN 0-670-59798-8 OP

★★ Single concept, PS–1

Five friends are riding along on their horse in this beginning subtraction book. One by one, mishaps occur, and riders are lost until there are no more riders. This format is similar to *Pigs Plus* but introduces subtraction sentences. See *Pigs Plus* above for a complete annotation.

Butler, M. Christina. *Too Many Eggs.* Illustrated by Meg Rutherford. Boston: David R. Godine Publisher, 1988.

ISBN 0-87923-741-4 $13.95

★★★ Single concept, PS–2

Pastel illustrations enhance this charming story of Mrs. Bear, who is baking a cake for Mr. Bear's birthday but does not know how to count. The reader helps Mrs. Bear by taking punched-out eggs from the cupboard in the back of the book and placing them in Mrs. Bear's mixing bowls throughout the story. Mrs. Bear believes she used only six eggs in her cake, but the reader is invited to collect the eggs from Mrs. Bear's mixing bowls and count them to find out how many were actually used. The story line and design of the book are unique. Together they provide a delightful way to extend children's counting activities to beginning addition.

Carle, Eric. *Let's Paint a Rainbow.* New York: Philomel Books, 1982.

ISBN 0-399-20881-X $4.95

☆ Single concept, PS–1

Two painters paint vibrant stripes two at a time on an increasingly larger rainbow of colors. The illustrations and the accompanying text in this cardboard book imply addition as each pair of stripes is neatly painted. At the bottom of each rainbow's end are rectangular-shaped cutouts. One cutout marks the number of stripes accumulated on the previous page; the other cutout is two stripes wider because it spans the entire width of the new rainbow's end. On each double-page spread, one cutout frames small mice; each mouse is pictured next to an interval of two stripes. This grouping could also imply counting by twos or multiplication by two. Specifically, one cutout frames three mice standing at the end of two stripes each; a fourth mouse is pictured nearby where two more stripes are currently being painted. The caption for this page is "Add RED and PINK; now we have EIGHT."

Charosh, Mannis. *Number Ideas through Pictures.* New York: Thomas Y. Crowell Publishers, 1974.

See Number Theory, Patterns, and Relationships

Dilson, Jesse. *The Abacus: A Pocket Computer.* Illustrated by Angela Pozzi. New York: St. Martin's Press, 1968.

See Number Systems

Fehr, Howard. *Number Patterns Make Sense.* A Wise Owl Book. New York: Holt, Rinehart & Winston, 1965.

See Number Theory, Patterns, and Relationships

Froman, Robert. *The Greatest Guessing Game: A Book about Dividing.* Illustrated by Gioia Fiammenghi. New York: Thomas Y. Crowell Publishers, 1978.

ISBN 0-690-01376-0 $11.99

★★★ Single concept, 1–3

Division concepts are introduced through guessing or estimating. A little girl and her friends try to estimate how much root beer is in each of three glasses and decide how many walnuts should be given to each person. Problems such as $6.00 divided by 4 and $8.27 divided by 5 are introduced in situations where the friends earn money by helping others and then share their wages equally. The delightful illustrations and the story line clearly show the children solving each problem and discussing what to do with remainders. Throughout the book, estimates are encouraged. When an estimate is too small or too large, it is not considered wrong; it is simply an initial guess—one on which to base our next guess. Readers are continually challenged by the conversational text to make their own estimates and to devise their own solutions.

_____. *Less Than Nothing Is Really Something.* Illustrated by Don Madden. New York: Thomas Y. Crowell Publishers, 1973.

See Number Concepts

Haney, Jan P. *Calculators.* Milwaukee, Wis.: Raintree Publications, 1985.

See Technology and Mathematics

Hawkins, Colin. *Adding Animals.* New York: G. P. Putnam's Sons, 1983.

ISBN 0-399-20940-9 $9.95

★★ Single concept, PS–2

Zany, colorful animals—crocodiles, bears, and pigs—introduce sums in which the addends are numbers from one through four in this pull-the-tab children's book. Each of the sturdy pages contains a humorous illustration, a question about the picture, and a number combination. For example, to introduce the combination 1 + 4, the caption reads, "How many sleepyheads are ready for bed?" One mouse in brightly striped pajamas is reading in bed; the pull tab folds up the blue and red quilt to reveal four mice (the second addend) hiding under the bed. The reader can solve the problem by counting the new set. Beside 1 + 4 =, the sum 5 appears in a window when the tab is pulled. Children should enjoy counting the animals to solve the problems in this appealing book.

_____. *Take Away Monsters.* New York: G. P. Putnam's Sons, 1984.

ISBN 0-399-20962-X $10.95

★★★ Single concept, PS–2

An irresistible book—the characters are monstrous, the situations are clever, and the rhymes are good. Add paper mechanics that allow the subtraction problems on each page to be solved as the illustration changes to accurately reflect the answer shown above it, and you have a winning combination. For example, a verse states, "Five monsters living in jail / One escapes, and they all start to wail." The partial number sentence $5 - 1 =$ appears with the verse. When the reader pulls a tab, the humorous scene depicting five monsters is transformed, as one monster disappears and a 4 completes the equation. The solution to the equation can be verified by counting the four remaining monsters.

Heath, Royal Vale. *MatheMagic: Magic, Puzzles, and Games with Numbers.* New York: Dover Publications, 1953.

See Number Theory, Patterns, and Relationships

Hutchins, Pat. *The Doorbell Rang.* New York: Greenwillow Books, 1986.
ISBN 0-688-05251-7 $12.95

☆ Single concept, PS–3

Sharing cookies among friends introduces beginning division concepts. The simple text opens with Victoria and Sam starting to share twelve cookies and comparing them to Grandma's cookies. Before they can place six cookies on each plate, the doorbell rings, and they are joined by two next-door neighbors. The doorbell continues to ring; so the children eventually must divide the cookies among six and then twelve. Victoria and Sam's mother welcomes each group as well as the surprise guest at the end of the book—Grandma with more cookies. Each double-page spread of the growing number of children gathered around the kitchen table is colorfully illustrated.

Law, Felicia, and **Suzanne Chandler.** *Mouse Count!* Illustrated by John Farman. Milwaukee, Wis.: Gareth Stevens, 1985.

See Number Concepts

Lear, Peter. *Let's Look at Computer Play.* Illustrated by Ron Migliore. Burlington, Ont.: Hayes Publishing, 1985.

See Technology and Mathematics

Lipson, Shelley. *It's BASIC: The ABC's of Computer Programming.* Illustrated by Janice Stapleton. New York: Holt, Rinehart & Winston, 1982.

See Technology and Mathematics

Mackie, Dean, and **David Mackie.** *Let's Look at BASIC.* Illustrated by Ron Migliore. Burlington, Ont.: Hayes Publishing, 1985.

See Technology and Mathematics

Marshall, Ray, and **Paul Korky.** *Libro animado de la resta.* Sadie Fields Productions, 1984.

ISBN 0-7226-5920-2

☆ Single concept, PS–1

Five *peces* (Spanish for *fish*) from a school of nine *peces* disappear into a whale's mouth as the tab on this tiny pop-up book is pulled. As the whale's mouth closes, the numeral 4 is uncovered to complete the number sentence 9 − 5 =. Four different take-away situations are effectively illustrated through colorful and clever design. The only text for each double-page layout is the Spanish name for the set of objects. A final layout shows eight subtraction sentences with a tab covering each answer. Because these are new combinations that are not introduced in the book, adult guidance will probably be needed to help the reader represent and solve each sentence. Also available by the same authors are *Libro animado de la suma, Libro animado de la multiplicación, and Libro animado de la división.*

Mathews, Louise. *Bunches and Bunches of Bunnies.* Illustrated by Jeni Bassett. New York: Scholastic, 1978.

See Number Theory, Patterns, and Relationships

_____. *The Great Take-Away.* Illustrated by Jeni Bassett. New York: Dodd, Mead & Co., 1980.

ISBN 0-396-07846-X $7.95

★★★ Single concept, PS–3

Five subtraction mysteries unfold in this appealing book. The colorful cartoons and clever, rhyming text depict a tranquil town of pigs. The pigs all work hard except for one lazy hog who decides, "Why should I hold down a job when I can think of ways to rob?" Cloaked in a cape to hide his loot with a minus sign emblazoned across his chest, he sets off to rob a nursery, a birthday party, a masquerade ball, a circus, and a bank. Each robbery is presented as a missing addend: "There were 10 necklaces; 2 are left. How many were taken away in the theft?" When the thief and his goods are captured, the answers to all the subtraction situations are revealed. Readers should also enjoy the subtle humor throughout the text.

Moerbeck, Kees, and **Carla Dijs.** *Six Brave Explorers.* Los Angeles: Price Stern Sloan, 1988.

ISBN 0-8431-2253-6 $9.95

★★★ Single concept, PS–3

Six brave explorers have encounters with pop-up creatures: a large bird, a cobra, a panther, a hyena, and a crocodile. In each successive subtraction situation, one explorer is "taken away." The explorers are countable, and subtraction is represented; for example, on the left-hand page, there are six explorers, and on the right-hand page, one of the six explorers is being carried away. The short, rhyming narrative has a surprise ending. This triangular-shaped pop-up storybook is unique in design. Its sturdy pages will withstand frequent use. Vibrant color and the action of the characters capture the mystery of the Nile.

Moncure, Jane Belk. *My Eight Book.* Illustrated by Linda Hohag. Elgin, Ill.: Child's World, 1986.

This book is part of a series of ten books; each book focuses on a number from one to ten. See the annotation for *My Eight Book* in "Number Concepts" for an overview of the series.

Robinson, Shari. *A First Number Book.* Illustrated by Sal Murdocca. New York: Grossett & Dunlap, 1981.

See Number Concepts

Srivastava, Jane Jonas. *Number Families.* Illustrated by Lois Ehlert. New York: Thomas Y. Crowell Publishers, 1979.

See Number Theory, Patterns, and Relationships

Trivett, John V. *Building Tables on Tables: A Book about Multiplication.* Illustrated by Giulio Maestro. New York: Thomas Y. Crowell Publishers, 1975.

ISBN 0-690-00593-8 OP
ISBN 0-690-00600-4 OP

★★★ Single concept, K–3

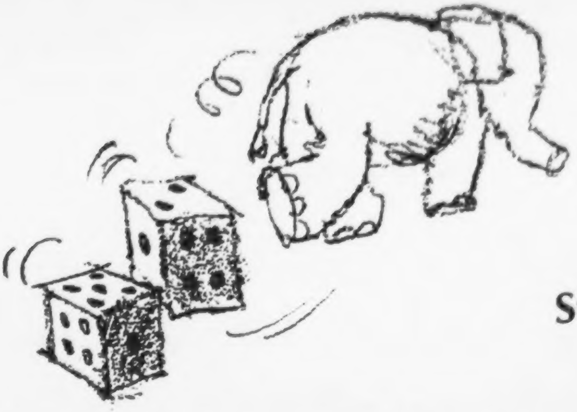
Trivett transforms the subject of tables into a lively, challenging topic that will stimulate the young reader's interest and imagination. Accompanied by Maestro's bright, helpful illustrations, Trivett invites the reader into a world of options where there are many names for the same number. Grouping twelve counters involves the reader in exploring the different possibilities: three groups of four (3 × 4 or 4 + 4 + 4) or uneven regroups of (3 + 4 + 5) or (3 + 3 + 6) or (2 × 3 + 6). Where problems require more than one operation, Trivett suggests the use of circles for grouping: $(\boxed{1 + 1 + 1} \times 4)$; and arrows for renaming, $(1 + 2) \times 4 \rightarrow (3 \times 4) \rightarrow (3 \times \boxed{5 - 1})$. The examples range from simple to more complex, and the surprising ending stimulates the reader to continue building tables until she or he has a simple computer!

Weiss, Malcolm C. *666 Jellybeans! All That? An Introduction to Algebra.* Illustrated by Judith H. Corwin. New York: Thomas Y. Crowell Publishers, 1976.

See Number Theory, Patterns, and Relationships

Zaslavsky, Claudia. *Zero: Is It Something? Is It Nothing?* Illustrated by Jeni Bassett. New York: Franklin Watts, 1989.

See Number Systems



Statistics and Probability

Opportunities for collecting, organizing, and describing data abound in this collection of books on predictions through probability and data analysis. Both experimental and theoretical probabilities are presented and explored. Experiments or simulations encourage the reader to become involved in exploring concepts of chance and making predictions. Activities include constructing sample spaces to determine probabilities. These books describe many excellent activities for constructing and selecting appropriate graphs as well as reading and interpreting displays of data—tables, charts, and graphs. A number of situations offer opportunities for readers to formulate and solve problems through collecting and analyzing data. Some connections to the real world reflect the children's world; others encompass larger segments of the population and environment. Some of the intriguing data, such as that in Parker's *In One Day,* should motivate readers to discuss uses of data and to formulate questions and situations of their own. Charts, diagrams, patterns, and organized lists are problem-solving strategies used by Mori in *Socrates and the Three Pigs* to introduce the reader to more sophisticated mathematical ideas.

Arnold, Caroline. *Charts and Graphs: Fun, Facts, and Activities.* Illustrated by Penny Carter. New York: Franklin Watts, 1984.
ISBN 0-531-04719-9 $9.90

★★ Single concept, K–4

Photographs and drawings are used to illustrate real-world applications and examples using pie, bar, and line graphs and pictographs. Activities to explore and construct graphs include having a group of children stand in a circle to create a pie graph, using blocks to form a bar graph, using the reader's daily activities to construct a time line, and cutting out paper figures to form a pictograph. This collection of activities also includes building a family tree, reading schedules and mileage charts, and making a book of your friends' telephone numbers. All these are special *charts*—different ways of organizing and presenting information. Illustrations are colorful and interesting and provide a multicultural focus for the book. The glossary is written in terms children can understand and is helpful in comparing various ways of presenting information. This book is a must for the school library.

Burns, Marilyn. *The I Hate Mathematics! Book.* Illustrated by Martha Hairston. Boston: Little, Brown & Co., 1975.

See Number Theory, Patterns, and Relationships

_____. *Math for Smarty Pants.* Illustrated by Martha Weston. Boston: Little, Brown & Co., 1982.

See Number Theory, Patterns, and Relationships

Cushman, Jean. *Do You Wanna Bet? Your Chance to Find Out about Probability.* Illustrated by Martha Weston. New York: Clarion Books, 1991.

ISBN 0-395-56516-2 $14.95

★★ Single concept, 4–7

Whether flipping coins to decide what television program to watch or analyzing which events are "certain," "impossible," or "maybe," Danny and Brian become involved in everyday situations, both in and out of school, that involve probability. When the weather forecaster predicts a 60 percent chance that there will be enough snow to close school tomorrow, should Brian do his homework tonight? When it doesn't snow, was the forecaster wrong? This issue leads to collecting data to look at forecasting accuracy. Receiving invitations to two birthday parties to be held on the same day leads to exploring the likelihood of two students in class having the same birthday. An intercepted note being passed in class leads to a discussion of codes and the frequency of certain letters in our language. The softball team's success this year is predicted by analyzing last year's batting averages. Cushman has woven a number of imporant probability concepts into an interesting story line with activities for the reader throughout the book. Drawings are used more to illustrate the story than to illustrate the concepts. A bibliography of resources that includes children's books and an index of concepts and activities are a plus.

Dunworth, John, and **Thomas Drysdale.** *Millions of People.* Illustrated by Bob Shein. New York: Holt, Rinehart & Winston, 1971.

ISBN 0-03-085-798-8 OP $3.96

☆ Single concept, 4–6

Graphs are defined as special kinds of pictures and symbols in this simply, but effectively, illustrated book. The graphs that present population data gathered about people from the classroom, the

United States, and the world reflect the book's title. The reader is guided into the development, reading, and interpretation of these graphs for meaning. From crude to detailed graphs, the text and accompanying illustrations emphasize their usefulness as easily accessible sources of information. The authors include very effective visual explanations of relationships between bar graphs and the data. Bar graphs, circle graphs, pictographs, and line graphs are introduced with a discussion of the kind of data each best illustrates. How to predict trends and populations from current graphs in response to challenging questions of social importance for the future is shown. The lack of current data is one limitation of the book.

James, Elizabeth, and **Carol Barkin.** *What Do You Mean by "Average"? Means, Medians, and Modes.* Illustrated by Joel Schick. New York: Lothrop, Lee & Shepard Books, 1978.

ISBN 0-688-41854-6
ISBN 0-688-51854-0 (library binding) $10.25

★★ Single concept, 3–8

The plans of Jill's student council campaign to appeal to the "average" student lead to an exploration of means, medians, and modes. As the campaign committee collects and analyzes data, the members discuss how to find the different averages and when to use them. Other concepts defined and explored include ranges, sampling, random sampling, weighting a sample, and universe. How to collect and tabulate data and how to transform them into percentages and graphs are also presented. The interesting narrative is complemented by black-and-white line drawings. Appropriate figures are used to clarify and present the data discussed.

Linn, Charles F. *Probability.* Illustrated by Wendy Watson. New York: Thomas Y. Crowell Publishers, 1972.

ISBN 0-690-65601-7 OP
ISBN 0-690-65602-5 OP

★★★ Single concept, PS–2

Mathematics helps scientists, pollsters, and industrialists make confident predictions using probability theory. By working through the experiments in this interesting and challenging book, young readers can get a feel for what is involved in probability theory. Vigorous little mice add humor to the text as they work on the same activities suggested for the reader. Keeping tables of tacks that land point side up and those that land point side down, deciding how many blue hats and how many red hats are needed for a party, or drawing graphs, the little mice talk the reader through an exploration of probability. The activities grow in complexity, but the clear directions and illustrations avoid confusion. With each activity, the theory is explained in the context of its usefulness as a means of prediction.

Lipscomb, Susan Drake, and **Margaret Ann Zuanich.** *BASIC Fun: Computer Games, Puzzles, and Problems Children Can Write.* New York: Avon Books, 1982.

See Technology and Mathematics

Lipson, Shelley. *More BASIC: A Guide to Intermediate-Level Computer Programming.* Illustrated by Janice Stapleton. New York: Holt, Rinehart & Winston, 1984.

See Technology and Mathematics

Mori, Tuyosi. *Socrates and the Three Pigs.* Illustrated by Mitsumasa Anno. New York: Philomel Books, 1986.

ISBN 0-399-21310-4 $13.95

★★★ Single concept, 4–8

Socrates, a wolf, and his friend Pythagoras, a frog, must figure out how to capture a succulent pig for Xanthippe, Socrates' hungry wife. This unusual book tackles the complicated problems of probability and combinatorial analysis through a series of diagrams showing all possibilities in determining in which of five houses one of the pigs could be found. The 125 diagrams are organized and drawn in patterns that lead to tree diagrams. An illustration of a tree with five limbs that each contain five branches that each contain five twigs summarizes the results. Other questions are explored, such as restricting the number of pigs in a house. Color is used effectively, since the individual pigs, dressed in red, yellow, or blue, are shown in gray when it is decided it isn't important which pig is being considered. Each situation is resolved using organized drawings and tree diagrams. The intent of this book is to introduce a sophisticated topic in an intuitive manner that leads to understanding through patterns and counting. Although for some students this book may be too complex, it is a rich, strong teaching tool. The illustrations, colorful and entertaining, are as important as the text in telling this complicated story.

Parker, Tom. *In One Day.* Boston: Houghton Mifflin Co., 1984.

ISBN 0-359-35368-8 $9.95

★★★ Single concept, no age given

Three hundred sixty-five statistics describing things Americans do in one day are presented in this book. Some of the diverse topics included are data on health, spending habits, accidents, crime, and our environment. Often the data are presented in a descriptive manner involving comparisons; for example, Fact 312 states, "Americans need 115 million gallons of drinking water to quench their thirst. Imagine a tumbler of ice water 500 feet tall and 200 feet in diameter." The illustrations are diverse; some are simply decorative to add interest. One tessellation illustrates the subtle change from desert to productive land through irrigation. Other illustrations use ratio dramatically to show data; the nation's daily consumption of 23 million gallons of soft drinks is depicted as a large soda bottle overshadowing the Statue of Liberty. Data involving 10 000, 30 000, 50 000, and 100 000 are represented by pages filled with dots. The reader should be aware of when the data were collected because some of the facts are obviously outdated. Census figures and numbers of VCRs or calculators are probably outdated. Nevertheless, readers should find the facts and illustrations fascinating and the information a benchmark for estimation and number sense. Across the border of each page is a running list of the organizations from whom the data were collected.

Petty, Kate. *Numbers.* New York: Gloucester Press, 1985.

See Technology and Mathematics

Riedel, Manfred G. *Winning with Number: A Kid's Guide to Statistics.* Illustrated by Paul Coker, Jr. Englewood Cliffs, N.J.: Prentice-Hall, 1978.

ISBN 0-13-961466-4 OP

★★ Single concept, no age given

Reasons for gathering statistics, sampling, experiments, and tricky comparisons are four topics in a chapter on gathering facts. In one or two pages, each idea is presented in a context that is meaningful and interesting to young readers. Subjects of other chapters that use the same format are graphs for presenting facts; statistical language of mean, median, and mode; statistics for decision making; and misrepresentations using statistics. Black-and-white drawings are used throughout the text to provide humor and to motivate readers. A related question is posed at the end of each page; for example, "What is the life span of a snake?" "Do opinion polls show that Americans believe in the energy crisis?" Answers are given at the book's end. One limitation is that some data from 1978 are no longer relevant. Nevertheless, the content of the book is most appropriate for an introduction to statistics, their use, and their limitations.

Srivastava, Jane Jonas. *Averages.* Illustrated by Aliki. New York: Thomas Y. Crowell Publishers, 1975.

ISBN 0-690-00742-6 OP
ISBN 0-690-00743-4 OP

★★ Single concept, K–3

Averages—mode, median, and mean—are introduced in an easily read text that is complemented by humorous illustrations. Mode, the "most of" average, is introduced through a discussion of different kinds of sandwiches and age groups of children on the block. The median for age, weight, and shoe size is found by choosing the middle child in a group of children shown standing in an ordered line. Fish weighing 4, 7, 8, 9, and 12 pounds are balanced on a scale by five 8-

pound fish effectively illustrating the concept of mean. This clever book encourages children to try the interesting activities that are clearly illustrated within it.

_____. *Statistics.* Illustrated by John Reiss. New York: Thomas Y. Crowell Publishers, 1973.

ISBN 0-690-77300-5 $12.89

☆ Single concept, 1–5

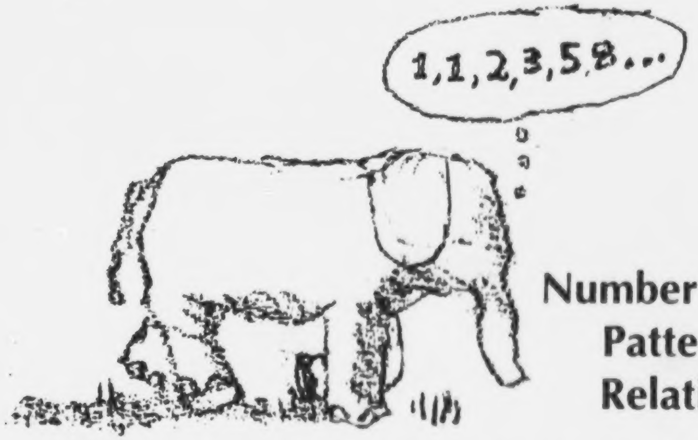
Statistics are introduced—what they are and how they are compiled, used, and misused. Statistics are defined as a count or measurement of something—the trees on the reader's street, the number of people in the apartment, and so on. A simple, concise text complemented by appropriate illustrations introduces the concepts of census taking, survey or poll sample, statistician, bar graph, circle graph, and line graph. The reader is encouraged to become involved in activities that include taking a sample, studying the results of a small versus a large sample, learning to devise fair samples, and making pictographs. The use and misuse of statistics are illustrated through a number of situations that occur in the reader's world.

Stwertka, Eve, and **Albert Stwertka.** *Make It Graphic! Drawing Graphs for Science and Social Studies Projects.* Illustrated by Carol Hillman. New York: Julian Messner, 1985.

ISBN 0-671-54288-5 (library binding) $9.29

☆ Single concept, 4+

The production, use, and value of many types of graphs are clearly covered in this small, easy-to-follow book. Separate chapters on line graphs, bar graphs, pie graphs, and pictographs discuss the factors to be considered in choosing and in constructing effective graphs to present different data. Topics include when to use floating baselines, how to use a decimal ruler, and how to determine appropriate scales. One chapter draws special attention to the importance of data collection and the analysis of data in graphs and charts, thus encouraging discriminating reading. Numerous examples include different ways to present data effectively as well as how the presentation of data can be misleading. Throughout the text, data and graphs are illustrated in black and white. The tables and graphs are not numbered; their placement is sometimes apart from the text that describes them. Without a reference to a specific table or graph, the reader can be temporarily confused. The text warns readers of the need for care in reading graphs and gives examples of misleading information in line graphs, truncated bar graphs, irregular pie wedges, and distorted pictographs. Computer graphing has its own chapter. An index is included.



Number Theory, Patterns, and Relationships

> As Sue Sherwood read *Cat Count* to her first graders, one child observed that the page said "plus four" rather than "four." The teacher asked them to guess what that might mean, and the children suggested that maybe they would add all the cats. Their predictions were confirmed; the illustration after "plus five" showed the accumulation of all the cats. As they continued through the book, the teacher asked them to estimate how many total cats there would be after they were introduced to the set of ten cats. They were discussing the reasonableness of different guesses like 100 and 1000 when one first grader announced, "There are fifty-five cats!" The child explained his reasoning by quickly holding up one finger, then two fingers, then three fingers, ...,while rapidly counting aloud. To help others understand his thinking, the teacher asked ten children to stand in a line and hold up from one to ten fingers. As a class they counted the fingers, verifying the child's conjecture.

Patterns, patterns, and more patterns are the common thread in this category. This section is dominated by quality books that explore number patterns and relationships. These patterns lead to topics in number theory and to ideas involving functions. Number patterns and relationships for young children are found in *Polka Dots, Checks, and Stripes* by Cornelius, *Pattern* by Pluckrose, and *Graph Games* by Frédérique and Papy. More sophisticated patterns and relationships can be explored in Anno's books, and representations leading to functions and algebra are presented by Froman in *A Game of Functions* and Weiss in *666 Jellybeans! All That? An Introduction to Algebra.*

The simplicity with which these ideas are presented makes these concepts accessible and appealing to children and adults. Srivastava's *Number Families* uses the concept of family to define and explore various sets of numbers; Charosh uses representations in *Number Ideas through Pictures* to illustrate square and triangular numbers. Representations and patterns are used by the Annos in Anno's *Mysterious Multiplying Jar* to explore factorials and by Lewin in *Cat Count* to find the sum of a sequence. Readers should be captivated by the problem-solving situations posed by Burns in *The I Hate Mathematics! Book* and *Math for Smarty Pants*, Hayes and Hayes in *Number Mysteries*, and others.

Adler, David A. *Calculator Fun.* Illustrated by Arline and Marvin Oberman. New York: Franklin Watts, 1981.

See Operations

Anno, Masaichiro, and **Mitsumasa Anno.** *Anno's Mysterious Multiplying Jar.* Illustrated by Mitsumasa Anno. New York: Philomel Books, 1983.

ISBN 0-399-20951-4 $12.95

★★★ Single concept, 3+

A story of imagination and mathematics is beautifully illustrated and poetically stated. A mysterious jar is the vehicle that transports the reader into the world of factorials. The jar contains rippling water that becomes a wide deep sea with one island containing two countries. "Within each country there were 3 mountains.... On each mountain there were 4 walled kingdoms." The pattern continues and accumulates until each of nine boxes contains ten jars. Through the text and the illustrations, the reader is aware that the pattern is rapidly expanding. Arrays and factorial notation are used to explore the relative size of each of these groups. To show that there were four walled kingdoms on each of six, or 3!, mountains, the array is four times larger than the previous array. $4! = 4 \times 3! = 4 \times 3 \times 2 \times 1 = 24$. In the afterword, the authors introduce additional ideas to explore with this multiplication pattern.

Anno, Mitsumasa. *Anno's Math Games.* New York: Philomel Books, 1987.

ISBN 0-399-21151-9 $18.95

★★★ Multiconcept, PS–3

The concepts in this 104-page book are beautifully illustrated, cleverly presented, and interrelated to ideas in the world around us. There is a section to help parents, teachers, or other older readers discuss and extend the ideas in this book. The first section, "What is Different?," contains sets from which the reader is to determine which object is different and how it is different. Many ideas and levels of sophistication are included; for example, an animal may not belong to the set because it flies or is extinct. Folklore and inventions introduce the second section, "Putting Together and Taking Apart." Charts record all twenty-five examples of the possibilities of crossing five colors with five articles of clothing (Cartesian products). The reader can extend "Putting Together" by exploring how five puzzle pieces can fit into various shapes. Playing cards introduce sequences and cardinal and ordinal numbers in "Numbers in Order." These concepts are extended in examples involving sequences and locations such as grids, a theater, and apartment houses. The last section, "Who's the Tallest?," introduces attributes that we can measure, such as weight and time, and discusses concepts that can't be measured, such as scary or sad. Direct comparison of heights leads to indirect measures using bar graphs, spring scales, and other measuring instruments. One of the last examples, on proportion, compares the relative numbers of sugar cubes in different-sized containers. A wealth of ideas appear in this book that can be extended to a number of situations; for this reason, it may be desirable to explore one chapter at a time. Readers of many ages should enjoy the challenges.

_____. *Anno's Math Games II.* New York: Philomel Books, 1989.
ISBN 0-399-21615-4 $19.95
★★★ Multiconcept, 1–4

Kriss and Kross, the two friends who guided readers through the explorations in *Anno's Math Games,* continue their investigations. This 104-page, five-chapter sequel is beautifully illustrated, cleverly presented, and similar in format and style to the first volume. The section to help parents, teachers, or other older readers discuss and extend the ideas in this book is very interesting reading. The first chapter is about relationships; a "magic machine" defines relationships between two sets with regard to age, number, doubling, shape, or one more than. There is some exploration of inverse relationships. "Compare and Find Out" emphasizes similarities and differences. On each pair of opposing pages, the reader makes comparisons of quantity, size, arrangement, type, position, and elements. The pages offer attractive and interesting challenges. The third chapter, "Dots, Dots, and More Dots," looks at points as a basic element of design—from the dots of the impressionist Seurat to the atoms composing all matter. One-to-one correspondence, rational counting, and place value are uniquely explored in "Counting with Circles." A different way to count substances such as sugar, salt, or water is explored in "Counting Water." Whether comparing congruent containers or counting small containers, creating calibrated measuring instruments or using different-sized measures, Anno's designs for exploring capacity measures are a delight.

Birch, David. *The King's Chessboard.* Illustrated by Devis Grebu. New York: Dial Books for Young Readers, 1988.
ISBN 0-8037-0365-1
ISBN 0-8037-0367-8 (library binding) $10.95
☆ Single concept, PS–2

An ancient land, now called India, is the setting for the story of a king who ponders a gift for his wise man in spite of the man's objections. At the king's insistence, the wise man acquiesces and asks for one grain of rice for the first square of the king's chessboard for the first day, two grains for the second square the next day, four grains for the third square on the third day, eight grains for the fourth square, and so on, doubling the amount of rice each day for each square on the chessboard. The king is perplexed about the proposed amount of rice for sixty-four days, but he is too proud to ask. In the days that follow, the Royal Weigher changes to measuring the rice by weight instead of counting the grains as he realizes the magnitude of the increasing numbers. On consultation with the Grand Superintendent and the Chief Mathematician, the king finally realizes his promise cannot be kept. The graceful illustrations reflect this classical problem as the tale unfolds.

Burns, Marilyn. *The I Hate Mathematics! Book.* Illustrated by Martha Hairston. Boston: Little, Brown & Co., 1975.

ISBN 0-316-11740-4 $13.45
ISBN 0-316-11741-2 7.70

★★★ Multiconcept, 5–8

"Street Math" and "Things to Do When You Have the Flu" are two of the chapters in this challenging book that sets out to show the reader how much fun mathematics can be. Estimation and prediction are used in experiments on how close you can approach pigeons or strangers on a street. This chapter on street math also includes patterns, definitions, estimation with volume and number, data collection, topology, combinations, and permutations. Each page presents one or more intriguing facts, questions, or experiments involving ratios, volume, estimation and measurement, spatial relationships, clock arithmetic, strategy games, and probability. The text is upbeat, and drawings add humor and clarity throughout the 127-page book. This should be a sure remedy to "I hate math" attitudes.

_____. *Math for Smarty Pants.* Illustrated by Martha Weston. Boston: Little, Brown & Co., 1982.

ISBN 0-316-11738-2
ISBN 0-316-11739-0 (paper) $6.95

★★★ Multiconcept, 5–8

"Arithmetic with a Twist," the first chapter in this absorbing book, explores the topics of looping, one-dollar words, and chummy numbers along with intriguing stories about three little pig eyes and incredible calculators. Geometry is the theme of "The Shapes of Math," as problems are posed about shapes, properties, estimation, and triangular and square numbers. Graphic explanations of factorials and offbeat facts about pencils and populations are incorporated into a chapter on statistics and probability. Other chapters focus on strategy games or logic puzzles including paradoxes and number theory. The puzzles in "Math Trickery" should fascinate readers and challenge them to consider, "Why?" A final chapter includes benchmarks for developing number sense about large numbers. Drawings are used throughout to provide humor, explanation, and appeal. This fascinating collection of problems and facts should captivate many middle school students.

Charosh, Mannis. *Number Ideas through Pictures.* New York: Thomas Y. Crowell Publishers, 1974.

ISBN 0-690-00156-8 $12.89

★★★ Single concept, 1–5

Simple text and clear, colorful drawings gradually lead the child into more sophisticated activities and generalizations in this exploration of odd, even, square, and triangular numbers. An example of this clearly visualized process is presented in the context of adding two odd numbers.

❑❑❑ ● → ❑❑❑●
❑❑ ●● → ❑❑●●
5 + 3 → 8
odd + odd → even

The logical development of ideas throughout the text make this a challenging and satisfying book.

Cornelius, Carol. *Polka Dots, Checks, and Stripes.* Illustrated by Diana Magnuson. Elgin, Ill. Child's World, 1978.

ISBN 0-89565-017-7 $7.45

☆ Single concept, PS–4

Patterns of geometric designs, polka dots, checks, and stripes, appear in rich watercolor illustrations. As the reader follows an elderly gentleman on his walk through realistic as well as imaginary scenes, opportunities for discrimination among patterns and relationships in design arise.

Fehr, Howard. *Number Patterns Make Sense. A Wise Owl Book.* New York: Holt, Rinehart & Winston, 1965.

ISBN 0-03-085-7961-1 OP

★★ Single concept, 4–6

There is more than one way to calculate an answer! Exploring number patterns through creative problem solving provides a number of options to challenge the reader. Some of the patterns lead to strategies for mental arithmetic; others lead to number theory. This interesting book should motivate readers to rediscover the fun in making sense of number patterns and possibly to create some of their own. Brightly colored numerals serve to clarify and reinforce some of the patterns.

Frédérique and **Papy.** *Graph Games.* Illustrated by Susan Holding. New York: Thomas Y. Crowell Publishers, 1971.

ISBN 0-690-34964-5 OP
ISBN 0-690-34965-3 OP

★★★ Single concept, 1–4

This simple and logical text is strongly supported by clear illustrations. A talkative dot invites the reader to explore the concepts of sets and relationships through diagrams. Arrows indicate clues and define relationships among the other dots, which are introduced by the talkative host. Not only is the dot talkative, it is charmingly saucy in its conversation with the reader! Although the dot and its friends have no form or gender at first, the main character adds more and more information until one is able to discern the sex and the families to which the dot and its friends belong.

Froman, Robert. *A Game of Functions.* Illustrated by Enrico Arno. New York: Thomas Y. Crowell Publishers, 1974.

ISBN 0-690-00544-X OP
ISBN 0-690-00545-8 OP

★★★ Single concept, K–3

"Your hunger is a function of when you last ate; this afternoon's activity is a function of the weather; and the amount of postage required is a function of the weight of your letter." These are the everyday situations that introduce the reader to the mathematical concept of *function*. The reader is invited to create mathematical functions by plotting lines, points, and graphs of lines. The reader can become actively involved in a variety of activities, all of which serve to expand the function concept. One misprint on the second to last page is a little confusing, but the young explorer will be confident enough by that stage to catch the mistake.

Hayes, Cyril, and **Dympna Hayes.** *Number Mysteries.* Illustrated by Peggy McEwen, Shane Doyle, Rick Rowden, and Jodi Shuster. Milwaukee, Wis.: Penworthy Publishing, 1987.

ISBN 0-87617-042-4

★★ Multiconcept, 4–6

Challenging problems for children appear in the text and lively illustrations. Unique and motivating topics include number puzzles involving number and operation sense, beginning probability, and ratio. Spatial relationships are embedded in some of the problems. To solve these problems, the readers will soon find themselves using such strategies as number lines, diagrams, models, graphs, tables, and patterns. The illustrations are colorful and humorous. However, since each page presents several problems to be solved, sometimes the illustrations appear a bit cluttered. Solutions to some problems are included at the end of the book.

Heath, Royal Vale. *MatheMagic: Magic, Puzzles, and Games with Numbers*. New York: Dover Publications, 1953.
ISBN 0-486-20110-4 $3.50
☆ Multiconcept, 2+

Number theory is the basis of many problems in this 126-page collection of number puzzles. Place value, base two, properties of operations, doubling, remainders, and palindromes are some of the other embedded mathematics concepts. Mental computation is included throughout the book, and one section describes "easy" ways to solve problems mentally. A section called number symphonies simply shows patterns involving primarily the multiplication of very large numbers. Magic is the theme of one section of ten number tricks to be played with another individual. Directions allow the reader to appear to be able to read the other person's mind. A numerical explanation is given of how the tricks work; more advanced readers could determine why they work using algebra. Thirty-seven pages explore a variety of magic squares and numbers in other patterns. Although parts of the book could entertain second graders, it is not designed for young children. The examples are multistep problems and require fairly sophisticated procedures, including square roots. This is an interesting resource for number tricks that could motivate middle school children. Illustrations are minimal, but some black-and-white drawings are used for diagrams and interest.

Lear, Peter. *Let's Look at Computer Play*. Illustrated by Ron Migliore. Burlington, Ont.: Hayes Publishing, 1985.
See Technology and Mathematics

Lewin, Betsy. *Cat Count*. New York: Dodd, Mead & Co., 1981.
ISBN 0-396-07928-8 $6.95
★★★ Single concept, PS–2

Whimsical black-and-white drawings of cats and their activities illustrate this charming counting book. The poetic text clearly catches the personalities of the featured felines. "Two cats, true cats, / Wild and ballyhoo cats, / Full of derring-do cats...." In the upper right corner of the double page on which this short poem appears is "+2." This encourages the reader to keep an ongoing account of the total number of cats seen. After sets of one, two, three, four, and five cats have been counted and totaled, a double-page illustration featuring all the cats mentioned furnishes an opportunity to double-check for accuracy, since the number 15 appears at the top right. A similar challenge is provided after the tenth set. A delightful surprise concludes this entertaining tale.

Mackie, Dean, and **David Mackie.** *Let's Look at BASIC.* Illustrated by Ron Migliore. Burlington, Ont.: Hayes Publishing, 1985.

See Technology and Mathematics

Mathews, Louise. *Bunches and Bunches of Bunnies.* Illustrated by Jeni Bassett. New York: Scholastic, 1978.

ISBN 0-590-41880-7 (paper) $2.50

☆ Single concept, K–3

Bunches of bunnies show multiplication of a number by itself. Each set of bunnies is uniquely drawn and is introduced through humorous rhyming verse. One page of a two-page spread has three sets of three bunnies planting, weeding, and watering. The opposite page shows the nine bunnies enjoying the harvest of their garden. The detailed illustrations depict 1 × 1 to 12 × 12 in set, rather than array, format.

Mori, Tuyosi. *Socrates and the Three Pigs.* Illustrated by Mitsumasa Anno. New York: Philomel Books, 1986.

See Statistics and Probability

Nesbit, E. *Melisande.* Illustrated by P. J. Lynch. San Diego: Harcourt Brace Jovanovich, 1989.

ISBN 0-15-253164-5 $13.95

☆ Single concept, K–3

Beautiful, detailed illustrations complement the prose of this intriguing fairy tale. A curse of baldness is the princess's christening gift from one of the evil fairies. She later is granted one wish, and her wish is for "golden hair a yard long, and that it would grow an inch every day, and grow twice as fast every time it is cut." Soon her hair becomes too long, but when cut, it grows two inches every day. The doubling process creates many problems before a solution is found. The mathematical opportunities in the book evolve around the sequence of doubling; the story line and its illustrations are well suited to exploring the consequences of this geometric sequence.

Phillips, Louis. *263 Brain Busters: Just How Smart Are You, Anyway?* Illustrated by James Stevenson. New York: Penguin Books, 1985.

See Reasoning—Classification, Logic, and Strategy Games

Pluckrose, Henry. *Pattern.* Illustrated by Chris Fairclough. New York: Franklin Watts, 1988.

ISBN 0-531-10619-5 $10.40

★★★ Single concept, 1–3

Wallpaper, tennis shoe soles, fabric, dishes, carpets, butterflies, leaves, and flowers—all these are illustrated in brilliantly colored photographs as examples of patterns in the world around us. Rotational and line symmetry are present in these patterns as well as in the examples using Legos, pattern blocks, paper cutouts, paint, or markers. The book with its simple text should help readers become more aware of the patterns in the world around us and encourage them to create original designs.

Sharp, Richard M., and **Seymour Metzner.** *The Sneaky Square and 113 Other Math Activities for Kids.* Blue Ridge Summit, Pa.: TAB Books, 1990.

ISBN 0-8306-8474-3
ISBN 0-8306-3474-6 (paper) $4.95

☆ Multiconcept, 3–7

"Traps and Conundrums," "Number Problems," "Geometricks," "Combination Puzzles," "Positioning," and "Mathematical Relationships" are the chapter titles in this book of problems and puzzles that includes many classic mathematical problems. A number of the problems appear to be tricks, but on closer examination, the explanations for their solutions are embedded in algebra, spatial reasoning, logical reasoning, number theory, and number relationships. Each problem shows the difficulty level (low, medium, or high) and the materials needed (usually paper and pencil); an example or diagram often illustrates the situation. A brief explanation helps answer why the problem works or relates it to a specific mathematical topic. Black-and-white drawings throughout the book help illustrate the problem or add interest. Processes of problem solving, mental computation, and mathematical reasoning will be needed to solve this challenging collection.

Srivastava, Jane Jonas. *Number Families.* Illustrated by Lois Ehlert. New York: Thomas Y. Crowell Publishers, 1979.

ISBN 0-690-03924-7 $12.89

★★★ Single concept, 2–5

Lively cartoonlike animals, produced from inkblot drawings, inhabit this well-designed text. The concept of sets is introduced through the analogy of how different members of a family are alike. Numbers whose counters can be arranged in pairs are defined as members of the even family. After the family of odds is defined, the reader is asked to determine whether certain numbers are even or odd. Counters arranged as arrays introduce multiplication families, such as the "2 times" and "3 times" families. These number concepts of family sets are extended to include primes and composites. The last families to be explored are square and triangular numbers. Throughout the text, the author provides answers and explanations to the questions from the previous pages.

Weiss, Malcolm E. *666 Jellybeans! All That? An Introduction to Algebra.* Illustrated by Judith H. Corwin. New York: Thomas Y. Crowell Publishers, 1976.

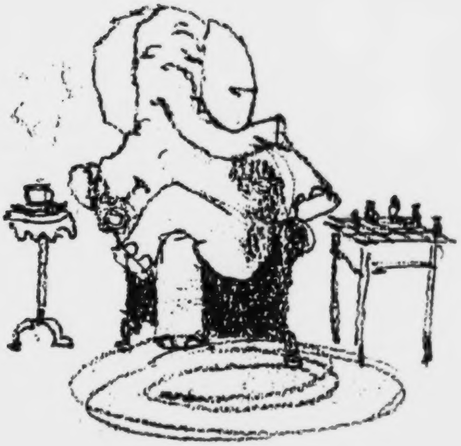
ISBN 0-690-00914-3 OP

★★★ Single concept, K–3

The reader is invited to participate in several number tricks; for example, think of a number, add one, double it, and so on, and end up with the original number. After capturing the reader's interest, the book asks the question, "Will it always happen?" A simple proof to explore the answer to this question uses paper bags to represent the unknown number; the unknown is later replaced by *b*. The transition from examples and models to variables is clearly communicated through the text and its illustrations. This simple introduction to algebra is logically developed and effectively illustrated.

_____. *Solomon Grundy, Born on Oneday: A Finite Arithmetic Puzzle.* Illustrated by Tomie de Paola. New York: Thomas Y. Crowell Publishers, 1977.

See Number Systems



Reasoning—Classification, Logic, and Strategy Games

The books by Hoban (*Is It Red? Is It Yellow? Is It Blue?* and *Is It Rough? Is It Smooth?)* and Pluckrose (*Sorting)* introduce beginning ideas in mathematics for children to explore through sorting, or classification. Classification and Venn diagrams are used by Froman in *Venn Diagrams* to solve problems involving logical reasoning. Gersting and Kuczkowski explore *and* and *or* situations and truth tables in *Yes-No; Stop-Go: Some Patterns in Mathematical Logic.* Other books contain story lines and representations to help the reader develop logical reasoning skills or pose problems that involve such reasoning. Books containing strategy games or puzzle problems that involve reasoning are also included in this category.

Allington, Richard L., and **Kathleen Krull.** *Thinking.* Illustrated by Tom Garcia. Milwaukee, Wis.: Raintree Publications, 1980.

ISBN 0-8172-1319-8 $14.65
ISBN 0-8172-1279-5

★★ Multiple concept, PS–2

Everyday situations and questions illustrate the many different things a child may think about. The situations require the reader to make choices, to put things in sequence, to provide rationales, to explain what has happened, and to predict what will happen. The reader is not asked to actually solve problems but to consider many situations involving reasoning. The colorful illustrations and the simple text could promote communication and problem solving as the reader ponders and explores each question.

Belton, John, and **Joella Cramblit.** *Domino Games.* Milwaukee, Wis.: Raintree Publications, 1976.

ISBN 0-8172-0625-6 (library binding) $13.31

★★ Single concept, 4–9

Muggins, matador, concentration, eleven-point black tile, the draw game, and fortress are the domino games described. The two opening chapters include basic terms used in each game. Each remaining chapter describes a game's purpose, instructions, scoring, and a sample game, illustrated with black-and-white diagrams and descriptive text. Both children and adults have enjoyed these traditional games, which require strategies as well as chance to win. Mental computation is needed in some games, since the object is to obtain sums of twelve, seven, or multiples of five.

The Book of Classic Board Games. Palo Alto, Calif.: Klutz Press, 1991.
ISBN 0-932592-94-5 $15.95

★★ Single concept, K+

Playing pieces and a container are attached to the sturdy cardboard cover; the fifteen game boards are printed on quality paper. The book is spiral bound, so it will lie conveniently flat. This thoughtful design and format are typical of Klutz Press. Also typical is the humor throughout the text and illustrations. Each artfully designed game board is preceded by a set of simple directions that include the number of players, how to start, and how to play, including sample plays. The table of contents suggests age levels and notes the level of difficulty of each game. The games in this book were selected if they required strategy and were multilayered for players of different experiences. The selected games have had universal appeal over a long time period; brief histories and the current status of each game are included. It appears that the staff also met the goals of providing games that are fun and involve logical thinking.

Booth, Eugene. *In the Garden.* Illustrated by Derek Collard. Milwaukee, Wis.: Raintree Publications, 1977.
ISBN 0-8393-0115-4 (library binding) $13.32

☆ Multiconcept, K–3

Colorful pictures of family activities in the backyard offer opportunities for many learning experiences—counting, making up a story, predicting what will happen next, and checking the prediction with pictures. The garden setting also provides activities involving size discrimination, identification of colors, inside/outside relationships, likenesses and differences, and identification of geometric shapes. The concluding challenge is a picture containing many errors that requires the reader to analyze illogical events and describe the mistakes.

Burns, Marilyn. *Math for Smarty Pants.* Illustrated by Martha Weston. Boston: Little, Brown & Co., 1982.

See Number Theory, Patterns, and Relationships

Butrick, Lyn McClure. *Logic for Space Age Kids.* Athens, Ohio: University Classics, 1984.

ISBN 0-914127-26-0 $4.95

☆ Single concept, 3–6

Zeno, from the planet Zircon, ponders problems involving logical deduction. On a right-hand page, a problem is posed such as, "If all grandfathers are men, and if some astronauts are not men, then...." When the reader turns the page, the sentence is completed; in this instance by a picture of a female astronaut and the caption, "Some astronauts are not grandfathers." The syllogisms often involve more than two propositions and contain quantifiers such as *some, all,* and *no*. In one instance, the reader is guided through a step-by-step solution of a problem posed in a two-page story. But there are no other guidelines to help the reader solve the problems; each new problem is simply presented. Simple, colorful cartoons are used in the humorous illustrations of the book.

Carle, Eric. *My Very First Book of Colors.* New York: Thomas Y. Crowell Publishers, 1974.

ISBN 0-690-52365-0 $4.95

☆ Single concept, PS–K

Carle develops this beginning classification book in the same format as the other books in this *My Very First Book of* ... series. The cardboard pages are cut horizontally and have rectangles of different colors on the top half of the pages. All these half pages are one color except one page showing nine swatches of different colors. Vibrant pictures of different objects are pictured on the bottom half of the pages. The child can turn the half pages separately to match the objects with the appropriate colors. Most illustrations are predominantly one color, but often there is more than one correct match.

Charosh, Mannis. *Mathematical Games for One and Two.* Illustrated by Lois Echlert. New York: Thomas Y. Crowell Publishers, 1972.

ISBN 0-690-52324-6 OP
ISBN 0-690-52325-4 OP

★★★ Single concept, 1–5

Eye-catching illustrations in bright orange, green, and black focus the reader's attention on the mathematical games in this challenging and readable book. The props for the games are easily accessible. Children are encouraged to try various strategies to achieve the object of each game, then are directed to determine the best way. Each game is introduced in its simplest form with more complex forms added later. Young problem solvers will enjoy the challenge of this interesting book.

Frédérique and **Papy.** *Graph Games.* Illustrated by Susan Holding. New York: Thomas Y. Crowell Publishers, 1971.

See Number Theory, Patterns, and Relationships

Froman, Robert. *Venn Diagrams.* Illustrated by Jan Pyk. New York: Thomas Y. Crowell Publishers, 1972.

ISBN 0-690-85996-1 OP
ISBN 0-690-85997-X OP

★★★ Single concept, 1–5

Venn diagrams, useful tools of logic, are introduced in their simplest form—two separate circles defining two different categories. However, as the directions and challenges progress, the reader is soon working with three overlapping circles and seven categories. Froman challenges his readers to search their environments and to classify the things they encounter. This easy-to-understand text guides the reader through progressively more difficult challenges. Pyk's amusing illustrations complement this lively introduction to a relatively sophisticated mathematical concept.

Gersting, Judith L., and **Joseph E. Kuczkowski.** *Yes-No; Stop-Go: Some Patterns in Mathematical Logic.* Illustrated by Don Madden. New York: Thomas Y. Crowell Publishers, 1977.

ISBN 0-690-01130-X $12.89

★★★ Single concept, K–3

Two drawbridge systems were studied by the castle guard. One system allows the friendly Whifflers entrance to the castle when bridge A *or* bridge B is down. The castle's other system, built to discourage the neighboring unfriendly Pifflers, also consists of two bridges, but bridge C *and* bridge D both have to be down before the Pifflers can enter. The *or* bridge system of the Whifflers and the *and* bridge system of the Pifflers provide a humorous situation through which the reader is introduced to truth tables and the challenge of building charts to document all possible combinations of bridges for the *and* and *or* situations. Extensions include examples such as switches in a train yard, checkout counters in a grocery store, and traffic lights on a street. The lighthearted illustrations complement the story line. The authors have presented sophisticated concepts in an informal and simple, well-developed manner. The age level of the readers should not be restricted to those grade levels recommended by the publisher.

Hayes, Cyril, and **Dympna Hayes.** *Number Mysteries.* Illustrated by Peggy McEwen, Shane Doyle, Rick Rowden, and Jodi Shuster. Milwaukee, Wis.: Penworthy, 1987.

See Number Theory, Patterns, and Relationships

Hoban, Tana. *Is It Red? Is It Yellow? Is It Blue?* New York: Greenwillow Books, 1978.

ISBN 0-688-80171-4 $13.95
ISBN 0-688-84171-6 (library binding) 13.88

☆ Single concept, K–3

Red, yellow, blue, orange, green, and purple are the vibrant colors captured in Hoban's photographs of familiar objects. The colors are named only on an opening page in this wordless text. Readers are to find objects in each scene that match each color shown in the lower border of each page. The appealing photographs offer an opportunity for readers to classify objects by color, which could be readily extended to classifying further by some other attribute.

_____. *Is It Rough? Is It Smooth? Is It Shiny?* New York: Greenwillow Books, 1984.

ISBN 0-688-03823-9 $10.25
ISBN 0-688-03824-7 (library binding) 10.88

☆ Single concept, PS–1

Bright pennies, rugged elephant skin, weathered tree bark, and sticky caramel apples are some of the objects shown in Hoban's photographic essay on texture. Strong images clearly convey the attributes of each surface. This no-text picture book could be used to encourage classification activities on texture or extended to the exploration of curved and flat surfaces.

_____. *Of Colors and Things.* New York: Greenwillow Books, 1989.

ISBN 0-688-07534-7 $13.95
ISBN 0-688-07535-5 (library binding) 13.95

★★ Single concept, PS–1

Photographed against a white background, each object is sharply defined in a color close-up. On each page, four photographs are separated by wide perpendicular bands of color; objects on any one page are predominantly one color. The brilliant photographs of greys, reds, blues, oranges, blacks, yellows, greens, and browns should invite comparisons among the objects on each page or on other pages. Since the objects are familiar, readers should be motivated to find other objects in their environment that have similar attributes.

Holland, Penny. *Looking at Computer Programming.* Illustrated by Patti Boyd. New York: Franklin Watts, 1984.

See Technology and Mathematics

Lipscomb, Susan Drake, and **Margaret Ann Zuanich.** *BASIC Fun: Computer Games, Puzzles, and Problems Children Can Write.* New York: Avon Books, 1982.

See Technology and Mathematics

My First Look at Sorting. New York: Random House, 1991.
ISBN 0-679-81162-1 $6.95
★★ Single concept, PS–K

Close-up photographs of familiar colorful objects on a white background effectively illustrate this book. Classification of these objects is the purpose of this book. The first activities ask the reader to decide what object does not belong to a particular set. In other activities, the reader is to find a match for different objects and determine which objects do not have matches. The remaining activities offer opportunities to sort by color, size, or function. As with the other books in the *My First Look at* ... series, the young reader will encounter many well-designed activities that are clearly illustrated and accompanied by a simple text.

Nozaki, Akihiro. *Anno's Hat Tricks.* Illustrated by Mitsumasa Anno. New York: Philomel Books, 1985.
ISBN 0-399-21212-4 $13.95
★★★ Single concept, 3+

Three characters interact in this unique book—Tom, Hannah, and Shadowchild, the reader. "What color is your hat?" is the question posed to Shadowchild in each activity in the book, which introduces binary logic. One or both of the other two characters are pictured on each layout wearing either red or white hats. The "shadow" of the reader and his or her hat stretches across each illustration. Since shadows do not show color, the color of Shadowchild's hat cannot be determined by looking at the illustration. Through a combination of illustrations and text, the reader can discern how many red and white hats there are and how many are already accounted for. By analyzing the various clues, Shadowchild can determine the color of his or her own hat. The questions gradually become more complex as the book progresses but always involve two choices—red hats or white hats. The author includes notes to parents and other older readers that extend the concepts and use tree diagrams to discuss some of the examples. The clever, clearly written text with its simple illustrations should motivate readers to explore the intriguing problems posed. This is another excellent example of significant mathematical ideas presented in a style and format suitable for children.

Phillips, Louis. *263 Brain Busters: Just How Smart Are You, Anyway?* Illustrated by James Stevenson. New York: Penguin Books, 1985.
ISBN 0-670-80412-6 $10.95
ISBN 0-14-031875-5 (paper) 3.95
☆ Multiconcept, 4–7

One of the seven chapters in this collection of brainteasers pertains to numbers. Many of these forty-three questions are problem-solving classics, such as the number of squares on a checkerboard, magic squares, and four 9s to express 100. Teasers are also included, for example, "How much dirt is there in a hole six feet...?" "What month has twenty-eight days?" and "Insert two punctuation marks so that 560 = 600." Logical thinking or humorous twists are involved in solving many of the 263 questions in the book. A final chapter is titled "The Answers! (Honest!)" Black-and-white drawings add interest to this challenging collection that should appeal to the humor of middle school children.

Pluckrose, Henry. *Sorting.* Illustrated by Simon Roulstone. New York: Franklin Watts, 1988.

ISBN 0-531-10548-2 $10.40

★★ Single concept, no age given

Set concepts are explored in colorful photographs in another excellent book from the Knowabout series. A pile of objects introduces the reader to sorting activities; these objects are shown on subsequent pages in different sets and subsets depending on the rule for classification. A variety of sets is presented for the reader to decide how to sort. The examples are not limited to only one rule for classification, and the reader will need to decide what the objects have in common. The book ends as it begins—with a pile of objects. The reader is encouraged to make a pile and sort in many different ways.

Reid, Margarette S. *The Button Box.* Illustrated by Sarah Chamberlain. New York: Dutton Children's Books, 1989.

ISBN 0-525-44590-0 $12.95

★★ Single concept, PS–3

A young boy's fascination with the contents of Grandma's button box is the basis of this classification story. Colorful illustrations and simple text invite the reader to sort, classify, sequence, and count buttons. Many ways to classify buttons are suggested: size, texture, number of holes, use, and composition. One illustration shows an interesting pattern of large to small buttons symmetrically arranged in rows of 1, 3, 5, 7.... Reid provides an opportunity that can be used as a springboard to other classification activities.

Sis, Peter. *Beach Ball.* New York: Greenwillow Books, 1990.

ISBN 0-688-09181-4
ISBN 0-688-09182-2 (library binding)

☆ Multiconcept, K–3

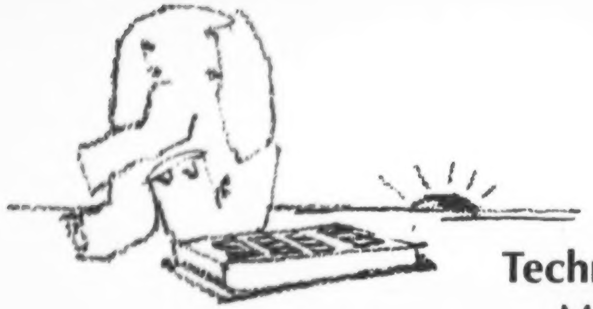
As Mary runs along the sandy shoreline in pursuit of her blown-away beach ball, she passes through a series of scenes filled with challenges to the reader. The pastel illustrations are filled with all types of interesting characters and humorous situations. In one busy scene, opportunities to count objects from one through ten include a school of nine fish swimming along the shore, a lady with eight pairs of sunglasses, the lifeguard with seven life preservers, and a man under two sun umbrellas. In another two-page spread, prisms, spheres, cylinders, tori, and other shapes are part of the seascape focusing on shape. Triangles, hearts, rectangles, hexagons, circles, and sectors of circles are included in the design and in the shapes of blankets, sails, and other objects. Another page shows some concepts of opposites including high and low, long and short, round and square, horizontal and vertical, and old and young. Nonmathematical activities include finding and naming objects of different colors or whose first letter is a different letter from A to Z. The final scenes include a maze and a search—"Where is Mary?" Throughout the book, the reader will be involved in discriminating and classifying; the detail should intrigue the reader through many readings.

Zaslavsky, Claudia. *Tic Tac Toe.* Illustrated by Anthony Kramer. New York: Thomas Y. Crowell Publishers, 1982.

ISBN 0-690-04316-3 $11.70
ISBN 0-690-04317-1 (library binding) 11.89

☆ Single concept, 4–7

Black-and-white drawings and diagrams illustrate this book of strategy games. After strategies for the familiar game of tic-tac-toe are analyzed, variations based on number and magic squares are introduced. More than fifteen different three-in-a-row games are introduced, including nine holes, nine men's morris, and nerenchi. Directions for each game include a diagram of the playing board, instructions on how to play, the object of the game, a sample game, suggestions for winning strategies, and variations of the game. The illustrations clearly show sample games so that the reader can follow each play. A final chapter describes how a computer can be programmed to play three-in-a-row. Historical backgrounds throughout each chapter include descriptions of the people who played the game and when they played it. Some of the games are over 1000 years old. A world map and a summary of different countries' names for the same game emphasize further the universal appeal of strategy games.



Technology and Mathematics

Originally, a list of more than fifty computer books was analyzed to find children's books that relate to mathematics. Most books were game books, textbooks, or computer literacy books. Even in the books that were eventually selected for this category, the primary intent was programming and computer literacy—mathematics was secondary. Some of the programs are excellent, others are average, and some have flaws. Some authors, such as Lipson in *It's BASIC: The ABC's of Computer Programming,* very simply describe the logic of different programming commands; these examples are often related to situations in a reader's life and to mathematics. It is hoped that the books selected will promote understanding the logic behind programming commands and exploring mathematics or its applications through selected programs.

Adler, David A. *Calculator Fun.* Illustrated by Arline and Marvin Oberman. New York: Franklin Watts, 1981.

See Operations

Dilson, Jesse. *The Abacus: A Pocket Computer.* Illustrated by Angela Pozzi. New York: St. Martin's Press, 1968.

See Number Systems

Haney, Jan P. *Calculators.* Milwaukee, Wis.: Raintree Publications, 1985.

ISBN 0-8172-1407-0	(library binding)	$15.99
ISBN 0-8172-1426-7	(paper)	9.75

★★★ Single concept, 4–12

How did people handle mathematical computation before calculators became available? This book contains a brief history of calculating machines, complete with pictures, from the abacus to the computer. It illustrates both the internal and external parts of the calculator and includes a detailed explanation of how these parts—segment lines, scan lines, and keyboard input lines—work together.

A detailed description shows the technical aspects of how the calculator does addition. Explanations for the other operations are brief. The binary code and integrated circuits are related to how the numerals are formed on the display. The final pages feature calculator activities and games including real-world problems with data containing large numbers.

Holland, Penny. *Looking at Computer Programming.* Illustrated by Patti Boyd. New York: Franklin Watts, 1984.

ISBN 0-531-10097-9 $10.90

☆ Single concept, 3–6

Logical thinking illustrates how computer programs work. Aspects of programs, such as branches, loops, and sorting, are explained in flowcharts and yes-or-no decisions. This is not a book on how to program, nor are any programs included. The book's focus is using logical thinking to understand how programs function. The examples do not use computers to explain mathematics, but simple mathematics examples are used to explain programming. Comparing numbers and sorting geometric figures help to explain loops and yes-or-no decisions in programming. Photographs and humorous drawings complement the interesting and clear text.

Lear, Peter. *Let's Look at Computer Play.* Illustrated by Ron Migliore. Burlington, Ont.: Hayes Publishing, 1985.

ISBN 0-88625-087-0

★★ Single concept, 1–5

How to enter, save, and change programs on different computers compose the introductory pages of this book. Approximately thirteen BASIC programs are included for the following computers: Adam, Apple, Atari, Commodore 64, PET, TRS-80, and VIC 20. Some of the programs are quite lengthy; some include graphics applications and games. Mathematics topics embedded in the programs include figuring out how many days until your next birthday, managing money, predicting the next number in a sequence, guessing a number between 1 and 1000, and determining your weight on the moon. How to use the computer to add, subtract, multiply, and divide is explored on two pages. This book is not for ages six to ten as suggested; readers from grades 3 to 5 would be more appropriate. The book is for the reader or family ready to begin entering and using BASIC programs. The illustrations appeal more to younger than older learners.

Lipscomb, Susan Drake, and **Margaret Ann Zuanich.** *BASIC Fun: Computer Games, Puzzles, and Problems Children Can Write.* New York: Avon Books, 1982.

ISBN 0-380-80606-1 $2.95

★★ Multiconcept, K–7

PRINT, LET, GOTO, INPUT, STRING, IF...THEN, FUNCTIONS, FOR...NEXT, SUBSCRIPTS, and SUBROUTINES are some of the topics in this beginning programming book. Each chapter contains a collection of computer programs that are sequenced by difficulty. Each program listing includes a sample run and a variable list. The programs are written for the Apple, but notes on modifications are included for Atari, Radio Shack TRS-80, Texas Instrument TI-99/4A, Hewlett-Packard HP-2000, and IBM Personal. A strong feature of this book is the challenge to the reader to modify each program to obtain different results. A number of the programs involve mathematics topics including ratios, averages, measurement, sequences, probability, and "number tricks." Applications of mathematics include recycling, allowances, installment buying, purchases, and interest rates. The only illustrations are samples of computer graphics; some of the programs at the book's end are long. In spite of these limitations, the questions posed throughout the book should involve the reader in problem-solving situations while learning about computer logic and variables.

Lipson, Shelley. *It's BASIC: The ABC's of Computer Programming.* Illustrated by Janice Stapleton. New York: Holt, Rinehart & Winston, 1982.

ISBN 0-03-061592-5
ISBN 0-03-000754-2 (paper) $3.95

☆ Single concept, no age given

Primarily describing programming in BASIC, this children's book gives examples of number concepts and reasoning to explain the process. Logical thinking about everyday events illustrates numbering and sequencing commands. In a chapter on processing, input, and output, the reader is cautioned about reasonableness of results in arithmetic calculations. How to display and solve problems using each of the four operations is explained in a chapter on PRINT statements; order of operations and parentheses are also explored. Chapters on GO TO, LET, and INPUT introduce variables and how to use them in programming. Sections on *less than, greater than,* and *equal to* explain loops and IF/THEN statements. Black-and-white drawings throughout the book of students asking questions or summarizing important ideas clarify this concise and clearly written text.

_____. *More BASIC: A Guide to Intermediate-Level Computer Programming.* Illustrated by Janice Stapleton. New York: Holt, Rinehart & Winston, 1984.

ISBN 0-03-070722-6 $9.95

☆ Single concept, no age given

After an introductory chapter reviewing Lipson's *It's BASIC: The*

ABC's of Computer Programming, this book centers on more advanced programming. Concise chapters explain outputting, looping, inputting, subscripted variables, functions, and subroutines. The main interest mathematically is found in the sections that describe storing data, generating random numbers, and rounding numbers using the INT function. These ideas are in programs that include probability concepts and data collection.

Mackie, Dean, and **David Mackie.** *Let's Look at BASIC.* Illustrated by Ron Migliore. Burlington, Ont.: Hayes Publishing, 1985.
ISBN 0-88625-085-4 $3.95

★★ Single concept, 1–5

Computer literacy is the primary focus of this book for young computer users. The text acquaints young learners with the computer and then presents a variety of beginning programs in BASIC, without reference to a particular computer (IBM, Apple, etc.). Computer literacy topics include saving, loading, input, output, variables, strings, loops, subroutines, and looking at errors; a computer glossary is also provided. Suggested activities allow the students to type in and run programs, as an application of the BASIC being learned. In these activities, special directions for the Atari machine are provided. Some of these programs include strategy games like nim and guess my number; examples exploring operations are included throughout the text. Parents and teachers probably need some, but minimal, computer background to use the book in its entirety. The content load of the book is fairly heavy. The illustrations seem oriented toward the primary grades, but the content appears more appropriate for grades 3–6 than for grades 1–5.

Parker, Pat, and **Teresa Kennedy.** *Logo Fun.* New York: Scholastic, 1985.
ISBN 0-590-33243-0 $5.95

☆ Multiconcept, 4–6

Although the primary concept in this book is computer usage, children will also develop problem-solving ability and will learn geometric concepts as they work through this activity book. Basic commands are in the introductory chapter followed by writing procedures, using color, drawing circles and other shapes, and using variables and recursion. Samples of graphics and procedures written by other children are included after the reader is introduced to new commands. The book moves in a very logical order from simple to complex, but adults will need to help children through their journey as they learn Logo. The authors have included Logo commands for four different versions of Logo software written for Apple II, Atari, and Texas Instruments computers.

Petty, Kate. *Numbers.* New York: Gloucester Press, 1985.
ISBN 0-531-17009-8 $9.40
☆ Single concept, K–6

Increasingly complex computer programs and computer games are presented in brightly colored, cartoonlike illustrations and clearly written directions. Readers are constantly reminded of procedural pitfalls in computer usage by a little cartoon character (a computer chip) who draws attention to a bright yellow box where the pointed reminder is featured; for example, "This is a program. Don't forget to press RETURN after each program line. You must do this with every program." The book's purpose seems to be to acquaint the reader with the mechanical process of using a computer. It does little to stimulate notions of how to program. Basically, the book is a game and puzzle book for the young computer fan. Programs include printing different multiplication tables, converting miles to kilometers, determining how many days old you are, and racing numbers across the screen. A number of the programs have excellent graphics, but the topic is limited, or there are errors. Probability concepts are illustrated in a program that collects data on the results of a computer-generated die. One program draws clear pie graphs but does not correctly illustrate the given data. The content of the program-generating bar graphs is contrived. Another program involves estimating the comparative area of a square, a circle, and a triangle, but there appears to be an error in the execution of the figures. The programs by Marcus Milton, Robin Betts, and Henry Waldock have potential but need more interesting mathematical tasks. A glossary of terms at the end of the book is helpful.

Stwertka, Eve, and **Albert Stwertka.** *Make It Graphic! Drawing Graphs for Science and Social Studies Projects.* Illustrated by Carol Hillman. New York: Julian Messner, 1985.

See Statistics and Probability

Watson, Clyde. *Binary Numbers.* Illustrated by Wendy Watson. New York: Thomas Y. Crowell Publishers, 1977.

See Number Systems

Zaslavsky, Claudia. *Tic Tac Toe.* Illustrated by Anthony Kramer. New York: Thomas Y. Crowell Publishers, 1982.

See Reasoning—Classification, Logic, and Strategy Games

_____. *Zero: Is It Something? Is It Nothing?* Illustrated by Jeni Bassett. New York: Franklin Watts, 1989.

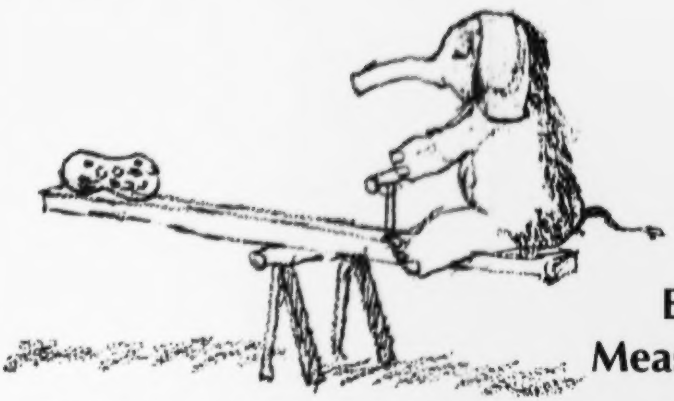
See Number Systems

Measurement

But the bed was too short for the queen.... The king was displeased and sent the carpenter's apprentice to jail.... The little apprentice pondered the dilemma from his prison cell.... He had carefully measured the requested dimensions in constructing the queen's bed.... What could have gone wrong?

The first graders listened intently as their teacher, Cheryl Lubinski, read Myllar's *How Big Is a Foot?* The children giggled at the picture of the tall, crowned queen lying in the little bed. They whispered to each other as they realized that the misunderstanding was due to the different sizes of the king's foot and the apprentice's foot. The children were pleased that they had solved the dilemma before the adults in the book did. The teacher then reread the book to the class. This time she asked them questions about the story, and they shared their ideas. After the discussion, they traced around their own feet on a sheet of paper and used their paper footprints to measure different lengths in the class. After the children measured the length of the room, the teacher showed them a cutout of *her* footprint. Would they get the same answer for the room's width if they used her footprint instead of one of theirs? Why? How many teacher footprints long would you estimate the room to be?

Myllar's *How Big Is a Foot?* is one of many quality children's books on measurement. Many books in the measurement category deal with time and money. These two topics can be related to subject areas other than mathematics, so they appear in two distinct sections. Because of the number and diversity of the books on time, these books are further divided into three sections: telling time, concepts of time, and extensions and connections. It was not necessary to subdivide the section on money. The remaining measurement books fit into two more sections. "Beginning Measurement" deals with attributes and perceptions. "Measurement Concepts and Systems" contains a number of excellent activity books that are appropriate for the individual child as well as groups in the classroom.



Beginning Measurement

Becoming aware of the different attributes of an object is essential to be able to determine what aspect to measure. Comparing relative sizes is the basis of a strategy that uses comparison to estimate the measure of an object. Exploring the attributes of an object and making comparisons are children's first introductions to measurement. Consequently, books that encourage this type of activity are classified together. Among the simplest books in this category are those that focus on contrasting attributes, such as Allington's *Opposites* and Hoban's *Push, Pull, Empty, Full.* Comparing the different attributes through examples and illustrations is the primary focus of some authors. Comparisons of a single attribute are found in Shapp's *Let's Find Out What's Light and What's Heavy.* Hoban's book *Is It Larger? Is It Smaller?* and Pluckrose's *Big and Little* depict comparisons of more than one attribute. Additional titles that also include comparisons are in the next category.

Allington, Richard L. *Opposites.* Illustrated by Eulala Conner. Milwaukee, Wis.: Raintree Publications, 1979.

ISBN 0-8172-1279-5 $14.65

★★ Single concept, K–2

Fourteen pairs of opposites appear in text and appealing pictures of familiar objects. Measurement opposites such as big or little and tall or short are included as well as opposites such as many or few, same or different, and left or right. Each pair is illustrated in two similar pictures and two descriptive sentences to show the contrast and the similarities. The book ends with an activity to review all the pairs of opposites by matching each word with its opposite and with a suggestion for making your own book of opposites.

_____. *Shapes.* Illustrated by Lois Elhert. Milwaukee, Wis.: Raintree Publications, 1979.

See Shapes.

Cantienti, Benita. *Little Elephant and Big Mouse.* Illustrated by Fred Gächter and translated by Oliver Gadsby. Saxonville, Mass.: Picture Book Studio, 1981.

ISBN 0-907234-09-7 $13.95

☆ Single concept, PS+

Each large double-page spread is illustrated with brightly colored, primitive drawings. In a story format, the simple text clearly introduces the concept of relative size. When Big Mouse finds he is too big and Little Elephant finds he is too small, a friendship evolves between the two. As the two friends discuss different comparisons, Big Mouse discovers that big and little are relative to the comparisons being made.

Disney's Pop-Up Book of Opposites. New York: Disney Press, 1991.

ISBN 1-56282-018-4 $6.95

★★ Single concept, no age given

A vacation in the woods starring Goofy, Pluto, Mickey, Minnie, and Mickey's two nephews sets the scene for this book of opposites. The concepts of opposites are cleverly incorporated into the pop-ups and colorful, appealing illustrations in this sturdy slender book. The reader can *open* and *close* the flap on Goofy's tent. By moving a tab, Mickey is either *inside* or *outside* the cabin. As a page is opened, Pluto runs *under* a log as Mickey jumps *over* it. Some other opposites include long and short, out and in, up and down, and big and little.

Greenfield, Eloise. *Big Friend, Little Friend.* Illustrated by Jan Spivey Gilchrist. New York: Black Butterfly Children's Books, 1991.

ISBN 0-86316-204-5 $5.95

☆ Single concept, PS–1

Everyday scenes and situations illustrate the relationships between an African-American boy and his two friends—his big friend and his little friend. The contrast between big and little appears on each pair of pages. One page depicts the child being taken to a playground by his big friend, and the opposite page shows the boy and his little friend playing at home. Two illustrations effectively show the size relationship among all three friends. This beginning concept book has sturdy cardboard pages.

Hoban, Tana. *Exactly the Opposite.* New York: Greenwillow Books, 1990.

ISBN 0-688-08861-9 $12.95
ISBN 0-688-08862-7 (library binding)

★★ Single concept, PS–2

More than one comparison is implied in each pair of Hoban's stunning photographs. A photograph of a youth lying in a hammock on an autumn day is contrasted with a second photograph that shows an empty hammock at a distance. Full and empty or near and far could be represented, but the reader is to find the opposites. Other comparisons readers can find in the natural scenes include front and back, left and right, big and little, full and empty, open and closed, and hot and cold.

_____. *Is It Larger? Is It Smaller?* New York: Greenwillow Books, 1985.

ISBN 0-688-04027-6	$11.75
ISBN 0-688-04028-4	11.88

★★★ Single concept, PS–1

Another excellent collection of Tana Hoban's gorgeous color photographs clearly illustrates the concept being considered. In any illustration, numerous comparisons can be made. One photograph shows two measuring cups, two bowls, three spoons, two whisks, and two spatulas. Another page shows three vases filled with three different kinds of flowers; the reader must first decide which objects are to be compared, such as the vases, before ordering them from tallest to shortest or shortest to tallest. Other attributes of the vases, such as volume, could be considered. In this no-text book, the photographs invite readers to make as many comparisons as they can. Because of the variety of everyday situations depicted, the readers should be motivated to start making comparisons in the world around them.

_____. *Push, Pull, Empty, Full: A Book of Opposites.* New York: Macmillan Publishing Co., 1972.

ISBN 0-02-744810-X	$12.95

★★★ Single concept, PS–2

Hoban makes another successful photographic journey in the exploration of the concept of opposites. Her black-and-white photographs of the strikingly familiar environment that surrounds the city child provide fifteen pairs of opposites (push, pull; empty, full; in, out; thick, thin; whole, broken; etc.). Even the end pages of this well-designed book reflect the theme of opposites because the beginning shows a fully leafed tree and the end depicts the naked branches of the same tree against the wintry sky.

Manley, Deborah. *The Other Side.* Illustrated by John Astrop. Milwaukee, Wis.: Raintree Publications, 1979.

ISBN 0-8172-1301-5	$13.31

☆ Multiconcept, PS–3

During their journey to the circus, some children encounter opposites: fast, slow; full, empty; clean, dirty; thin, fat; happy, sad; big, small; tall, short; and front, back. The children also become involved in counting, but these opportunities are minimal. The easy-to-read text follows a logical sequence of events during the trip and is illustrated by colorful pictures. Although the emphasis is on opposites, some words that have similar meanings are also illustrated. Overall, this conversational text is unfocused and is limited in developing mathematical relationships.

McMillan, Bruce. *Becca Backward, Becca Frontward.* New York: Lothrop, Lee & Shepard Books, 1986.

See Beginning Spatial Concepts

Moncure, Jane Belk. *The Biggest Snowball of All.* Illustrated by Joy Friedman. Chicago: Children's Press, 1988.

ISBN 0-516-05745-6 $8.25

☆ Single concept, PS–2

Little Bear's tiny snowball rolls on and on gathering more snow and becoming the biggest snowball of all. The story clearly illustrates comparative terms from tiny to small, big, bigger, even bigger, and biggest of all. Some of the terms are reinforced when three friends hop on a sled with "the smallest in front and the biggest in back." The idea of a hollow snowball, when "Little Bear made a wide door so they could get inside," is most unbelievable and is probably confusing to the young reader. When the sun comes out, the biggest snowball of all melts down to the tiny snowball it once was. Simple pastel illustrations help tell the story.

My First Look at Sizes. New York: Random House, 1990.

ISBN 0-679-80532-X $6.95

★★ Single concept, PS–K

Comparisons and sequences are effectively illustrated in the crisp, colorful photographs. Eight various-sized balls are sequenced from little to big, whereas nine seashells are arranged from big to little. Three decorative gifts depict big, bigger, and biggest, and Russian dolls illustrate small, smaller, and smallest. Carefully selected round things—an apple, a tomato, an orange, a ball of yarn, and an onion—clearly depict objects of the same size. Same size is also shown by considering each object in a pair, such as boots, gloves, and socks. Appealing illustrations and simple text dominate this thoughtfully designed beginning book.

Petty, Kate, and **Lisa Kopper.** *What's That Size?* New York: Franklin Watts, 1987.

ISBN 0-531-10282-3 $9.90

☆ Single concept, PS–1

Jack, Amy, their friends, and their parents visit the zoo, giving the reader opportunities to explore the concepts of big, tall, fat, thin, long, short, small, tiny, and same size. Most books that introduce the concept of size use comparison to illustrate that size is relative; this book does not. Only on the last double page, which shows all the examples and related vocabulary, does the reader have the opportunity to make comparisons easily. Most of the other examples depend on the readers' experiences. This little book would be interesting read-aloud material for young children if accompanied by discussion and activities. The pictures of friends have a multicultural focus.

Pienkowski, Jan. *Sizes.* New York: Little Simon, 1990.

ISBN 0-671-72844-X $2.95

★★★ Single concept, PS–K

Size is clearly depicted as comparison in this extremely colorful book; the concepts of *big* and *little* are represented by such contrasting illustrations as an ocean liner and a little sailboat and a tree and a flower. Minimal text accompanies the brightly colored graphics. Originally published in 1973, this Pienkowski book is reprinted as a nursery board book in an 8.5 cm by 8.5 cm format.

Pluckrose, Henry. *Big and Little.* Illustrated by Chris Fairclough. New York: Franklin Watts, 1987.

ISBN 0-531-10373-0 $9.90

☆ Single concept, PS–2

The concepts of *big* and *little* are represented by a variety of objects of interest to young children. Children are guided in ordering several objects by size. The limited text with the interesting full-color photographs can encourage meaningful oral-language development in children. Size is illustrated as comparison. The sizes of a car, a truck, and a bus are compared on successive pages to an adult standing beside each vehicle. Without adult guidance the book might confuse rather than clarify. For example, four different-sized chairs are pictured on four separate pages. The same teddy bear appears on each of the pages. To judge the relative size of the chairs, the reader needs to recognize that the teddy bear is the referent for comparison.

Scarry, Richard. *Short and Tall.* Racine, Wis.: Western Publishing Co., 1976.

ISBN 0-307-11827-4 $1.50

☆ Multiconcept, PS–3

Opposites are explored in a number of contrived situations, which are illustrated in typical Scarry style. Unfortunately, his illustrations are too good for the text, which wanders off course losing sight of the original goal. Almost as an afterthought, a double-page spread devoted to shapes attempts to extend the topic; the reader is to identify three-dimensional objects as representations of rectangles. A subsequent page deals equally superficially with the topic of color.

Schneider, Herman, and **Nina Schneider.** *How Big Is Big?* Illustrated by Symeon Shimin. Reading, Mass.: Addison-Wesley Publishing Co., 1946.

ISBN 0-201-09229-8 OP

★★★ Single concept, K–4

Using the child as the baseline for all comparisons, the author challenges the reader to explore his or her relationship to bigger things and smaller things. The simply stated text is complemented by clear, black, white, and yellow drawings as it explores the theme through comparisons—you certainly are big, but an elephant is bigger; a tree is bigger than an elephant; a skyscraper is bigger than a tree; a mountain is bigger than a skyscraper; the moon is bigger than a mountain; the earth is bigger than the moon. Having explored some things that are bigger than the child, the reader is encouraged to list some things that are smaller—a puppy, a mouse, and a flea. The reassurance "You are just the right size" is a satisfying conclusion to this well-written book.

Shapp, Martha, and **Charles Shapp.** *Let's Find Out about What's Big and What's Small.* Illustrated by Carol Nicklaus. New York: Franklin Watts, 1975.

ISBN 0-531-00005-2 OP

★★★ Single concept, K–3

Next to an elephant, a rabbit looks small, but next to a mouse, a rabbit looks big. Measurement as a concept of size relationships is explored through clear, questioning text and simple line drawings. To tell exactly how big or how small, one must simply have some way to measure. A skill-building word list of comparative terms and relevant vocabulary is in the back of the book.

_____. *Let's Find Out about What's Light and What's Heavy.* New York: Franklin Watts, 1975.

ISBN not available OP

★★★ Single concept, K–3

Some things are light and some things are heavy, but what is light and easy to carry for one person may be heavy and difficult to carry for another. Eye-catching and humorous illustrations expand the concept in the simple text. Two suggested experiments explore the comparative lightness and heaviness of different objects until a final conclusion is reached—to find out how light or how heavy, one must weigh an object using a standard measurement of weight. This logically developed text will entice readers to this thoughtful conclusion.

Spier, Peter. *Fast-Slow, High-Low: A Book of Opposites.* New York: Doubleday & Co., 1972.

ISBN 0-385-06781-X
ISBN 0-385-02876-8 (library binding) $4.95

☆ Single concept, K–3

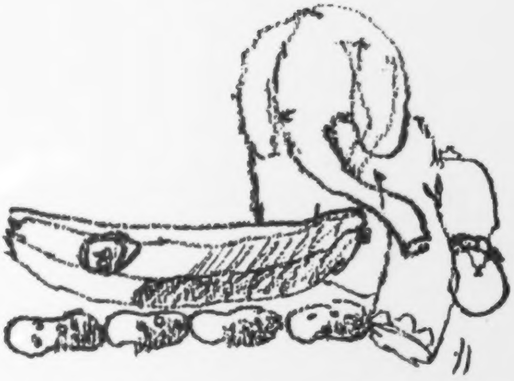
The opposites big and small are illustrated through such pairs as circus tent and pup tent, ostrich and robin, city and town, and whale and fish. Each concept is named and then illustrated with a colorful collage of eight to fifteen examples. Young and old, old and new, long and short, deep and shallow, up and down, straight and crooked, on and off, tall and short, open and closed, full and empty, heavy and light, wide and narrow, same and different, more and less, and few and many are some of the concepts that are effectively illustrated by Spier. The closing task is front-back, top-bottom; the examples range from a colored pencil and a child on a tricycle to a farmer standing in line with a dog, a pig, a chicken, a horse, and a cow. The reader should enjoy these humorous examples while exploring spatial perception.

Youldon, Gillian. *Sizes.* New York: Franklin Watts, 1982.

ISBN 0-531-05166-8 (library binding) $9.40

★★ Single concept, 1–3

Examples introduce the relative concept of size through unique design and vibrant color. The book uses a cutout format that allows the reader a glimpse of the animal whose size will be defined in a different relationship on the next page. One page shows a big fish and a little snail; the next page shows the same fish, but now it's a little fish compared to the big octopus. This clever use of cutouts reinforces the concept that size is relative to the comparison being made.



Measurement Concepts and Systems

The attributes of length, weight, area, volume, temperature, and angles are explored in greater detail in this second measurement category. Arbitrary units of measurement, nonstandard and standard, are used to experiment with the process of measuring and to introduce measurement systems. Adam's unique book *Ten Beads Tall* will give young readers many opportunities to work with an arbitrary unit of measurement, and Branley's book *Think Metric* effectively explains the need for a standard unit and involves children in activities designed to encourage their application of that standard. Srivastava engages readers in active exploration in *Weighing and Balancing* and is just as effective exploring area measurement in her book *Area*. Measurement of liquids and solids is introduced in Pluckrose's *Capacity*. Pluckrose's real-life examples move from attributes to comparisons to measurements in both *Capacity* and *Length*. Finally, more sophisticated real-life applications of measurement can be found in Ardley's *Making Metric Measurements* and Laithwaite's *Size: The Measure of Things*.

Adams, Pam. *Ten Beads Tall.* Sudbury, Mass.: Child's Play International, 1989.
ISBN 0-85953-242-9 $8.95

★★ Single concept, PS-2

Sturdy cardboard pages, bright primary colors, and a string of multicolored beads nestling in a long furrow gouged in the top of the book may fool the reader into believing this is a toy book for a preschooler. Not so! This unique little book is compelling for the youngster who is beginning to explore the concepts of size relationships and measurement. The string of ten multicolored cubes is the tool that helps readers accept the challenge to measure the lengths and widths of objects on each page. "How tall?" "How wide?" "How long?" "How tall and high?" "How long, high, and wide?" are some of the questions asked. The last two pages offer special challenges. On one page, a variety of vehicles approach a tunnel, and the reader is asked to determine which ones will pass through. On the final page the reader is asked to use the measure to match various toys with the appropriate storage box.

Adler, David A. *Three-D, Two-D, One-D.* New York: Thomas Y. Crowell Publishers, 1975.

See Geometry and Spatial Sense

Allen, Pamela. *Mr Archimedes' Bath.* New York: Lothrop, Lee & Shepard Books, 1980.

ISBN 0-688-41919-4
ISBN 0-688-51919-9 (library edition)

★★ Single concept, PS–2

Pen-and-ink lines and watercolor create the charming illustrations throughout this humorous story of Mr Archimedes' discovery of measuring volume by water displacement. This improbable tale shows Mr Archimedes pondering why his bath always overflows. He measures the depth of the water but finds that as he, a kangaroo, a goat, and a wombat get into the tub, the water flows over the rim. They experiment by getting in and out of the tub, each time measuring the level of the water. One by one Mr Archimedes orders his friends out. "Eureka!" He finally discovers that *they* make the water level go up and down. This delightful tale is a good introduction to water displacement of objects.

Allington, Richard L., and **Kathleen Krull.** *Measuring.* Illustrated by Noel Spangler. Milwaukee, Wis.: Raintree Publications, 1983.

ISBN 0-8172-1389-9	$14.65
ISBN 0-8172-2482-3 (paper)	9.75

☆ Single concept, 1–2

Readiness activities on counting and comparison introduce this measurement book about length. The comparison activities involve concepts such as *smallest, biggest, long, short, same size, equal to,* and *greater than.* Counting activities include counting sets and charts by ones and tens. The reader can also count nonstandard units such as hands and footprints for linear measurement, but a flaw exists on one page— the footprints are not drawn end to end. Other activities include finding objects longer than and shorter than ten centimeters and making a chart of your family's measurements. Directions are given for making a meter ruler, a necklace of fifteen-centimeter paper strips, a belt of thirty-centimeter pieces of yarn, and a picture for the reader's room with ten-centimeter colored paper strips. Pleasing, colorful illustrations accompany a simple text describing a number of good activities. Parts of the book are very appropriate for young children, but other projects are too advanced for these children.

Anno, Mitsumasa. *Anno's Sundial.* New York: Philomel Books, 1987.
See Time

_____. *Anno's Math Games.* New York: Philomel Books, 1987.
See Number Theory, Patterns, and Relationships

_____. *Anno's Math Games II.* New York: Philomel Books, 1989.
See Number Theory, Patterns, and Relationships

Ardley, Neil. *Making Metric Measurements.* New York: Franklin Watts, 1983.

ISBN 0-531-04615-X $10.90

★★ Multiconcept, 4–6

This collection of excellent, relatively sophisticated activities is part of the Action Science series. Pendulums are constructed to explore time, graphs are used to record changes in temperature while heating water, and graph paper is used to explore area, circumference, and pressure. Additionally, there are activities involving weight, height, speed, volume, and density. For each experiment, there is a list of easily accessible materials with clear and meaningful explanations of how children can use them to relate metric measurement to everyday life as well as to the science they study in school. Except for one activity on making a slide rule to convert within the metric system, the activities in this book are conceptually oriented. One questionable feature is the conversion table for standard and metric measures. Since this is at the end of the book, it can be readily ignored. Illustrations clearly depict both males and females in nonstereotypical roles.

Arnold, Caroline. *Measurements: Fun, Facts, and Activities.* Illustrated by Pam Johnson. New York: Franklin Watts, 1984.

ISBN 0-531-04721-0 $9.90

☆ Multiconcept, K-4

Photographs and drawings in color and black and white are used to illustrate this text. A variety of activities about number, height, weight, distance, speed, time, temperature, area, and capacity are presented through real-world applications and experiments, but the quality of the information and activities varies. An activity on the construction and use of an abacus assumes the reader understands place-value concepts. Heights are measured to the nearest inch or decimeter. Throughout the book, directions for experiments are given in both customary and metric terms, but in one section, the reader has a choice of measuring 3/4 cup or 187.5 mL. It is also questionable whether following the directions for making a kite would result in a kite that flies.

Branley, Franklyn M. *How Little and How Much: A Book about Scales.* Illustrated by Byron Barton. New York: Thomas Y. Crowell Publishers, 1976.

ISBN 0-690-01058-3 OP

★★★ Single concept, K–3

On a scale of 1 to 10, how much do you like ice cream? This imprecise "like" scale is one of several that the young reader is invited to explore. Measurement as a means of comparison is introduced as readers are encouraged to compare the heights of different objects. The subsequent activities develop a greater awareness of the need for more precise units of measurement (inches, feet, and centimeters). The book includes a concise history of the Fahrenheit and Celsius scales for measuring temperature. Occasional full-color pages are interspersed with the simple but helpful illustrations.

_____. *Measure with Metric.* Illustrated by Loretta Lustig. New York: Thomas Y. Crowell Publishers, 1975.

ISBN 0-690-00576-8 OP
ISBN 0-690-00577-6 OP

★★★ Single concept, K–3

Lively illustrations supplement this clear, concise text that introduces the metric units of length, mass, and volume. The reader is encouraged to measure items in the environment after making a ruler to measure centimeters. Using easily available gram weights, such as two safety pins, and a simple balance scale, the reader is guided to weigh various objects. Constructing a sturdy liter box is also an included activity. All the activities are excellent introductions to measurement.

_____. *Think Metric!* Illustrated by Graham Booth. New York: Thomas Y. Crowell Publishers, 1972.

ISBN 0-690-81861-0
ISBN 0-690-81862-9 (library binding)

★★ Single concept, 3–6

The origins of measurement units and comparisons between the English and metric systems are the themes of this 50-page informational book that succeeds in documenting measurement as a human activity. Intriguing historical examples (an acre is the amount of land a pair of oxen could plow in one day) illustrate the problems of nonstandard measurements. The successes and failures of the scientists Celsius, Fahrenheit, and Kelvin are described as each works on perfecting a temperature scale. Increased trade and scientific work indicate the need for a universal system of measurement; the discussion of the metric system includes both the development of its units and its gradual acceptance by most cultures. Examples of the uses of measurement and the need for accuracy are interwoven throughout the book. Some activities involving metric measures are included for the reader. Both current and obsolete units appear in a table of English-metric equivalents. Although conversions are not encouraged by mathematics educators, this table has merit for its interesting collection of such units as bodges, barrels, bolts, chains, firkins, gills, and goads.

Burns, Marilyn. *The I Hate Mathematics! Book.* Illustrated by Martha Hairston. Boston: Little, Brown & Co., 1975.

See Number Theory, Patterns, and Relationships

Clement, Rod. *Counting on Frank.* Milwaukee, Wis.: Gareth Stevens Children's Books, 1991.

ISBN 0-8368-0358-2 $18.95

★★★ Single concept, 1–2

Frank (a dog) and his young owner (who wears sunglasses just like his dog's) are the stars of this outstanding book on the estimation of measurements and numbers. Each double-page spread with its hilarious illustrations shows the two companions investigating new and outlandish situations. One continuous line spiraling over the living room walls, furniture, and a sleeping dad illustrates that an average ballpoint pen will draw a line twenty-three hundred yards long before running out of ink. Piles of "Franks" depict the estimate that twenty-four Franks should fill the bedroom. The family, including the everpresent Frank, sits surrounded by green peas to illustrate the estimate, "If I had accidentally knocked fifteen peas off my plate every night for the last eight years, they would now be level with the table top. Maybe then Mom would understand that her son does *not* like peas." The duo also explores volume—for example, how long it would take to fill the bathroom with water—and length—for example, how tall the boy would be if he grew as fast as the gum tree in the yard. The zany situations and illustrations should captivate young readers as well as adults.

Diggins, Julia E. *String, Straightedge, and Shadow: The Story of Geometry.* Illustrated by Corydon Bell. New York: Viking Press, 1965.

See Geometry and Spatial Sense

Donovan, Frank. *Let's Go Metric.* Illustrated by Roy Doty. New York: Weybright & Talley, 1974.

ISBN 0-679-40057-5 $5.95

☆ Single concept, no age given

Cubits, shekels, ephahs, and hins are some of the earliest units of measurement described by the author. The confusion caused by these variations and the creation and spread of the metric system are told in the fascinating context of the political and cultural climates of Europe and the United States. Examples that compare applications of the metric and customary systems show the ease of calculations using metric units. An entire chapter is devoted to the discussion of industry changeover with the conclusion that the impact of conversion would be negligible or slight for 90 percent of the products produced in the United States. Numerous examples of everyday life reflect minimal changes for the average consumer, but some examples are stereotypes of traditional women's and men's roles. The political climate has changed since the book was written; consequently, some of the arguments for change no longer appear valid. Other arguments for change, including eliminating fractions from the curriculum and improving performance in mathematics, appear oversimplified. Not all chapters are equally fascinating; some belabor a point. It is not necessary to read each chapter or even the entire chapter to appreciate the author's argument. Humorous black-and-white drawings are interspersed throughout this 154-page narrative. The content load of this informative text might limit its use to the highly motivated reader.

Fey, James. *Long, Short, High, Low, Thin, Wide.* Illustrated by Janie Russell. New York: Thomas Y. Crowell Publishers, 1971.

ISBN 0-690-50549-3 OP
ISBN 0-690-50550-7 OP

★★★ Single concept, 1-4

Hands, cubits, and paces were used in ancient times to tell how long or tall or far away things were. Today, units of measurement such as feet and inches and meters and kilometers are standard. Bright collage illustrations support the well-written and challenging text as it guides children in the exploration of measurement as comparison. The measuring activities offered throughout this historical account of the development of the standard units will delight young readers and test their measuring skills.

Froman, Robert. *Angles Are Easy As Pie.* Illustrated by Byron Barton. New York: Thomas Y. Crowell Publishers, 1976.

See Geometry and Spatial Sense

_____. *Bigger and Smaller.* Illustrated by Gioia Fiammenghi. New York: Thomas Y. Crowell Publishers, 1971.

ISBN 0-690-14195-5 OP
ISBN 0-690-14196-3 OP

★★★ Single concept, 1–4

This easily read, questioning text, accompanied by refreshingly funny drawings, explores some hilarious and unlikely comparisons in coming to terms with the relativity of size. Some statistics are given about the heights and weights of the biggest man, the littlest man, big animals, and little animals. Froman and Fiammenghi have joined forces to make a truly fun-filled, action-packed exploration of the concept of size.

Laithwaite, Eric. *Size: The Measure of Things.* New York: Franklin Watts, 1988.

ISBN 0-531-10263-7 $9.90

★★ Multiconcept, 5–8

Interestingly written text complemented by clear and helpful pictures and diagrams provides highly informative reading and reference. The author presents size in terms of relationships—scaling, size ranges, size and time, length and frequency, biggest and smallest, size in numbers, complexity, and so on, with attention in each instance both to natural contexts and to human creations. The numerous examples exploring the relative size of area, volume, speed, distances, and sets can help students develop references and comparisons for number. The examples are fascinating. Several experiments to illustrate and explore the concepts discussed could be performed either at home or in the classroom. The content is also rich in mathematical information, which could be a springboard for further activities and investigations, such as constructing graphs, forming ratios for additional size comparisons, and making and testing models.

Lamm, Joyce. *Let's Talk about the Metric System.* Middle Village, N.Y.: Jonathan David Publishers, 1974.

ISBN 0-8246-0158-0 $5.95

☆ Single concept, 3–6

The first chapters in this book discuss the need for measurement, the historical development of measurement, and the confusion of several different measuring systems. The reader can easily relate the description of metric units to several everyday examples. Megameter, gigameter, micron, and picometer are noted as being large multiples and small subdivisions of the meter. The problems of changing measurement systems are discussed, and the status of metric measurement in the United States is described. One recommendation of leaders in the metric measurement movement is to avoid using conversions, but conversions are part of this book. The comprehensive nature of this extremely thorough book may interest an advanced third grader or be an excellent resource for the teacher. The suggested reading level implies its appropriateness for the more mature reader.

Leaf, Munro. *Metric Can Be Fun.* Philadelphia, Pa.: J. B. Lippincott Co., 1976.

ISBN 0-397-31679-8 $12.89

Single concept, 1–3

Black-and-white sketches illustrate this introduction to the metric system. The need for a common worldwide measurement system is briefly discussed. The structure of the metric system is shown by presenting the basic units—meters, liters, and grams—and six prefixes. The six terms *deca-*, *hecto-*, *kilo,- deci-*, *centi-*, and *milli-* are introduced, but in actual use, some are more commonly used for length, weight, and volume than others. Activities involving meters, centimeters, decimeters, and millimeters are included. The area of rectangles and the volume of cubes are presented only by formula rather than by an explorative approach. Overall, the topics are not developed logically or smoothly.

Linn, Charles F. *Estimation*. Illustrated by Don Madden. New York: Thomas Y. Crowell Publishers, 1972.

ISBN 0-690-27033-X OP

★★★ Single concept, PS–2

Estimate how long it will take you to finish your homework. How close did you come with your guess? You will get better at making these kinds of guesses with a little practice. Activities and experiments are suggested to help young readers improve their skills in estimating countable quantities, volumes, and lengths. Students are always challenged to test the closeness of their estimates. Simple line drawings clarify a well-written, activity-based text. Together, text and illustration involve the readers from beginning to end in the development of a skill that has relevance to their successful daily living.

Maestro, Betsy. *Temperature and You*. Illustrated by Giulio Maestro. New York: Lodestar Books, 1990.

ISBN 0-525-67271-0 $13.95

☆ Single concept, K–3

Temperature concepts are presented simply in a readable text with pleasing, pastel illustrations. Outdoor activities such as swimming and sledding appear with thermometers marked with both Fahrenheit and Celsius scales. Benchmark temperatures such as boiling, freezing, and body temperature are integrated into the text, and uses of temperature in baking cookies and ironing clothes are depicted. "Notes about Temperature" is the heading on the final page.

Myllar, Rolf. *How Big Is a Foot?* New York: Dell Publishing, 1991.

ISBN 0-440-40495-9 $2.99

★★★ Single concept, PS–3

As a surprise for the queen's birthday, the king decides to have a bed made for her. (Beds haven't been invented yet; so it will really be a surprise.) The large king marks off the dimensions for the proposed bed with his feet. He gives these dimensions to the head carpenter who gives them to his little apprentice. When the bed is delivered, it is too small, and the apprentice is jailed. From his jail cell, the apprentice solves the problem, and everyone lives happily ever after. This humorous tale about nonstandard measures will delight young readers. Simple drawings illustrate this narrative.

Parker, Tom. *In One Day*. Boston: Houghton Mifflin, 1984.

See Statistics and Probability

Pluckrose, Henry. *Capacity*. Illustrated by Chris Fairclough. New York: Franklin Watts, 1988.

ISBN 0-531-10547-4 $9.90

★★★ Single concept, 1–5

Capacity is effectively introduced through brightly colored photographs of a pair of hands gently emptying firmly packed sand from a pail. The space inside a container is explored by measuring both liquid and solid materials. Questions about comparisons occur throughout the text as the reader compares familiar containers of different shapes and sizes. Although metric units are shown in the pictures, only customary units are presented in the text. Beautiful color photographs complement the simple text and invite the readers to explore capacity concepts with activities of their own.

_____. *Length*. Illustrated by Chris Fairclough. New York: Franklin Watts, 1988.

ISBN 0-531-10618-7 $9.90

★★★ Single concept, 1–3

Which folded-up shoelace would be the most appropriate for each brightly photographed shoe? This initial estimation question to readers promotes the definition of length—the measurement of something from end to end. Both nonstandard (handspans and paces) and standard (metric and customary) measurement units are introduced. Different length units, such as centimeters and inches, meters and feet, and kilometers and miles, appear in situations that show the need for selecting an appropriate unit. Comparisons and the differences between height and length are also explored. This beautifully designed book with brilliant photographs and simple text is typical of this series by Pluckrose.

_____. *Numbers*. Illustrated by Chris Fairclough. New York: Franklin Watts, 1988.

See Number Concepts

_____. *Weight*. Illustrated by Chris Fairclough. New York: Franklin Watts, 1988.

ISBN 0-531-10525-3 $9.90

★★ Single concept, PS–2

Full-page color photographs on which the text is superimposed supply the stimulus for a meaningful discussion of the concept of weight. The need to know how heavy things are is presented first; then applications of the metric system are given. Several photographs show real-life applications, for example, luggage at the airport, fruit and vegetables at the market, and a scene showing that "even elephants need to be weighed sometimes." Throughout the book, the reader is asked to estimate which of two objects is heavier. The estimates are checked using either dial or balance scales; the reader is asked to interpret the readings or results of these measurements.

Schwartz, David M. *How Much Is a Million?* Illustrated by Steven Kellogg. New York: Lothrop, Lee & Shepherd Books, 1985.

See Number Concepts

_____. *If You Made a Million.* Illustrated by Steven Kellogg. New York: Lothrop, Lee & Shepherd Books, 1989.

See Money

Shimek, William J. *The Liter.* Illustrated by George Overlie. Minneapolis, Minn.: Lerner Publications Co., 1975.

ISBN 0-8225-0587-8 $4.95

☆ Single concept, 2–5

Volume and capacity are depicted through a series of questions relevant to a child's life: "How much water is in this glass?" "What's the capacity of this sand box?" Various multiples and subdivisions of a liter are introduced rather than just the commonly used milliliter and liter. The concepts are clearly and logically developed with the measurements given in relative terms: "A centiliter has the same volume as 10 milliliters." "Every liter has the same volume as 1000 milliliters or 100 centiliters or 10 deciliters." The final pages of the book contain the abbreviations for the units and a table of equivalent measures. Simple illustrations in bright primary colors support the text. It is difficult to learn about capacity through printed text. The examples in this book are good, but they are limited to comparisons rather than explorations.

Srivastava, Jane Jonas. *Area.* Illustrated by Shelley Freshman. New York: Thomas Y. Crowell Publishers, 1974.

ISBN 0-690-00404-4 OP
ISBN 0-690-00405-2 OP

★★ Single concept, 1–5

Simple text and complementary illustrations combine to develop the idea of area and how to measure it. Readers quickly get involved in interesting activities as the text guides them through a comparison of two areas by measuring the areas with pennies, squares, and triangles used as arbitrary units. Different sizes of postcards, nonstandard units, are used to measure desktops. Later in the book, square units of measurement are introduced to measure areas, including the surface areas of boxes and balls.

_____. *Spaces, Shapes, and Sizes.* Illustrated by Loretta Lustig. New York: Thomas Y. Crowell Publishers, 1980.

ISBN 0-690-03961-1	$12.70
ISBN 0-690-03962-X	12.89

★★★ Single concept, 1–3

Volume is the main concept explored in this interesting book. The experiments of five mischievous animals are observed in charming charcoal drawings as they discover many important facts about volume. The text encourages the readers to model these activities and experiment for themselves. One of the first activities describes emptying a small box of sand onto a piece of paper, observing its many changing shapes, then returning the sand to the box to observe the unchanged volume. Another activity involves constructing different shapes of buildings with the same number of blocks. Conservation of volume is illustrated throughout the book by changing a shape while the volume remains constant. In other activities, the volumes are compared and measured with such units as apples, crayons, sand, and popcorn. The volumes of irregular-shaped objects are compared and measured through water displacement. Srivastava's superb book on volume would be an excellent addition to any mathematics library.

_____. *Weighing and Balancing.* Illustrated by Aliki. New York: Thomas Y. Crowell Publishers, 1970.

ISBN 0-690-87114-7	OP
ISBN 0-690-87115-5	OP

★★★ Single concept, 1–4

Seesaws, mobiles, and even people can act as balances. Now the challenge is to make one for yourself so that the idea of a balance can be truly explored. Directions for a simple balance are clearly given. All the materials are easily gathered from any home or classroom. Equipped with the homemade balance, the reader can answer the challenging questions in this intriguing text. The investigations should motivate the reader to use arbitrary units of measurement (jellybeans, marbles, and pencils) and standard units (pounds and ounces) . The complex subject of density is introduced in a fascinating experiment using a jar of water, a stone, and a piece of wood. Aliki's simple line drawings clarify the well-developed text effectively.

Measurement of Time—Telling Time

Learning to tell time both on face and digital clocks is the introduction to time concepts for most children. The simplest books in this category relate specific times to important events in the young reader's day. *Time to ...* by McMillan is an example of this kind of book, and Killingback's *What Time Is It, Mrs. Bear?* uses the same concept in a fantasy setting. More advanced representation of telling time is introduced in books that present the half and quarter hours—Cave and McKenna's *Just in Time* and the Trivetts' *Time for Clocks.* Both of these books also represent telling time in five-minute intervals. Cave and McKenna depict different activities every five minutes in an hour; the Trivetts show models for reading clocks in five-minute intervals.

Cassidy, John. *The Time Book.* Illustrated by Roger Bollen. Palo Alto, Calif.: Klutz Press, 1991.

ISBN 1-878257-08-0 $10.95

★★★ Single concept, no age given

Attached to the front of this slender, cardboard, spiral-bound book is a colorful quartz watch with a second hand. The reader can use this watch to answer the questions in the book. Good explanations with illustrations help the reader estimate time using only the hour hand for times "on the hour," "a little after," "half past," and so on. After this introduction, telling time with the minute hand is explored. The watch's hands do not move continuously, so the reader can see the hand jump from one minute mark to the next. After learning to count the intervals by ones, a shortcut of counting by fives is introduced. Interwoven among the telling-time lessons are references and interesting facts about time: "Stuff that takes about one hour" could be watching two TV programs or eating twelve ice-cream cones. The humorous illustrations and examples should appeal to readers.

Cave, Kathryn, and **Terry McKenna.** *Just in Time.* New York: Clarkson N. Potter, 1989.

ISBN 0-517-57311-3 $8.95

☆ Single concept, PS-2

Rhyming verses and humorous cartoon illustrations relate the story of an hour in Tom's life. The story begins when his alarm clock rings at eight o'clock, and it continues in five-minute intervals with a face clock and a digital clock showing each successive time. The times 8:15 and 8:30 are referred to as "quarter past eight" and "half past eight" on the face clock; at 8:35 the narrative relates the time as twenty-five minutes to 9 for the face clock. Minimal explanations are given for these different concepts.

Edmonds, Jane, and **Mark Sachner.** *Time!* Illustrated by Ainslie Macleod. Milwaukee, Wis.: Gareth Stevens, 1985.

ISBN 0-918831-92-X
ISBN 0-918831-91-1 (library binding) $9.95

☆ Single concept, 2–4

After being introduced to some important time words and their definitions, the reader can follow Hattie, Barney, Mama, and Papa through their busy day. The day progresses from 6:00 a.m. (early morning) to 12:00 p.m. (midnight). Each page's upper-left-hand corner contains the time, which is reinforced by Hattie, who is holding her circular alarm clock and is wearing a T-shirt showing the same time on a digital clock. Each double-page spread accommodates the action of the passing day and the text that describes it. Although the inset picture of Hattie defines the time when the action begins, the text of the page emphasizes the passage of time. Thus, the "7:30 a.m. Time to Get Dressed" page states, "No time to lose! At 7:32 Barney looks for the perfect outfit.... By 7:44 Barney has found his pants...." The vibrant and humorous illustrations effectively support the story of this boisterous family and their hectic day. The idea of a quarter hour is briefly introduced but not discussed, since time is defined in hours and minutes elsewhere in the story. The negative attitudes the teacher and students display toward school and its activities seriously detract from the more positive aspects of this book. The authors include "Things to Talk About," "Things to Do," and a list of "More Books about Time" at the end of the book.

Füchshuber, Annegert. *Ten Cuckoo-Clock Cuckoo.* Minneapolis, Minn.: Carolrhoda Books, 1988.

ISBN 0-87614-320-6 $4.95

☆ Single concept, K–3

Numerous clock faces with corresponding digital readings are shown throughout the book, depicting such times as 12:00 p.m., 4:00 a.m., 4:02 a.m., 11:37 a.m., and 4:45 p.m. Each time period traces the adventures of a cuckoo who is trying to get back into the clock after being locked out. Each illustration of the outside of the home where the cuckoo clock resides reflects the day's activities and the changing light patterns. The fanciful story line and illustrations should appeal to the young reader

Grey, Judith. *What Time Is It?* Illustrated by Susan Hall. Mahwah, N.J.: Troll Associates, 1981.

ISBN 0-89375-509-5		$9.89
ISBN 0-89375-510-9	(paper)	2.95

☆ Single concept, K–2

"What time is it?" is the repeated refrain of the bushy squirrel to other creatures throughout the book. Each query is answered with a set of questions, such as "Is it time for breakfast? Lunch? Dinner?" or "Is it time to run? Swim? Ride?" The ultimate statement is "It is time to read!" The main purpose of the text appears to be to establish a beginning reading vocabulary and to emphasize the importance of reading. The questions could promote a discussion about various activities at different times of the day. The colorful cartoonlike illustrations are consistent with the simple text.

Katz, Bobbi. *Tick-Tock, Let's Read the Clock.* New York: Random House, 1988.

ISBN 0-394-89399-9	$5.95

☆ Single concept, PS–1

A clock with movable hands and also dials to show digital times is sturdily incorporated on the last page of this book. The previous pages have cutouts so that this aid can be used for each page. The times are limited to 7:00, 8:30, 12:00, 4:00, 7:30, and 12:00. For each time, the reader is asked to change the hands of the clock and the dials so that the digital clock corresponds to the clock face. The directions are explicit; for 8:30, the short hand is to point halfway between 8 and 9 and the long hand is to point to 6. Pastel cartoonlike illustrations on the opposite pages show children involved in appropriate activities for each time.

Killingback, Julia. *What Time Is It, Mrs. Bear?* New York: William Morrow, 1985.

ISBN 0-688-04076-4	$6.25

☆ Single concept, PS–K

"What time is it, Mrs. Bear?" is the question repeated on each double-page spread of this tiny book. Clock faces show times from the time to get up at eight o'clock to the time for bed at six o'clock and relate to the hourly activities of Mrs. Bear's "terribly British" family of ten. The times for the activities reflect the British culture, since lunch time is 1 o'clock and suppertime is 4 o'clock. Each scene is detailed, colorful, busy, and somewhat chaotic.

McMillan, Bruce. *Time to....* New York: Lothrop, Lee & Shepard Books, 1989.

ISBN 0-688-08855-4		$13.95
ISBN 0-688-08856-2	(library binding)	13.88

☆ Single concept, PS–2

From seven o'clock in the morning to nine o'clock in the evening, each hour of a kindergartner's activities is illustrated in full-color photographs. Each layout includes a photograph of a large wall clock clearly showing the time. The details around the clock, the teddy bear, and the coat rack change with the shadows and lighting of the passing day. The captions express the time in digital form as well as the written form. Each opposite page shows the child throughout the day—eating breakfast, talking with friends at school, and buying apples at the store. The photographs capture the essence of the child's day, which is shared by friends from different cultures.

Moncure, Jane Belk. *Wise Owl's Time Book.* Illustrated by Helen Endres. Chicago: Children's Press, 1982.

ISBN 0-516-06566-1 $10.60

☆ Single concept, 2–4

After Wise Owl receives a clock for his birthday, the little owls practice telling time with the hands of the clock. First, a little owl counts to 12 and then they play a game, identifying typical events that occur from 7:00 a.m. until 12:00 noon. The half hour is introduced briefly, but all the clocks depicting the half-hour time show the hour hand pointing directly to a numeral. Counting five-minute intervals and telling time to the minute are briefly mentioned. In a closing activity, Moncure explains how to make a paper-plate clock. Clear pictures support the text with color; nevertheless, the content load of the book is too great without careful assistance from an adult.

Pienkowski, Jan. *Time.* New York: Little Simon, 1990.

ISBN 0-671-72847-4 $2.95

☆ Single concept, PS–K

Simple illustrations in brilliant color combinations dominate this book that is typically Pienkowski. Each left-hand page shows a clock face. The minimal text records the time. The times are all to the hour; not all the hours between five o'clock and midnight are represented. On the opposite pages are scenes of activities appropriate for each time. From the rooster crowing at five o'clock to playtime at eleven o'clock to bathtime at six o'clock, the colorful scenes should appeal to the young reader. Originally published in Great Britain, this book has been reprinted as a nursery board book in an 8.5-by-8.5 centimeter format.

Roy, Cal. *Time Is Day.* New York: Astor-Honor, 1968.
ISBN 0-8392-3065-6 $9.95

☆ Single concept, K–3

Time elapses from 5:00 a.m. to 9:00 p.m as a brilliant sun changes position from page to page. Colorful illustrations of a clock, the sun, and the actions of a child depict three ways to tell the time as the day progresses. Blocks of time are omitted between 9:00 a.m. and 12:00 noon and between 1:00 p.m. and 3:30 p.m. No explanation is given for this nor for the sudden change from presenting the hour only to the inclusion of half hours such as 3:30 p.m. After a cursory introduction of night and day, the text switches to years and seasons without logical development. Time concepts are not introduced in a logical sequence nor with adequate explanations, making the book inappropriate as an introduction to the concept of time.

Thompson, Carol. *Time.* New York: Delacorte Press, 1989.
ISBN 0-385-29765-3 $12.95

☆ Single concept, PS–K

One page of each double-page spread contains a clearly marked circular clock whose black minute hand always points to 12. The hour hand is a different color, but it is always the same color as the clock's numerals. "What time is it?" is the query on the opposite page, which shows Little Bear involved in his daily activities, from getting up at seven o'clock to going to bed at six o'clock. The pleasing, colorful illustrations of Little Bear's activities are complemented by the settings of the animated clocks.

Trivett, Daphne, and **John Trivett.** *Time for Clocks.* New York: Thomas Y. Crowell Publishers, 1979.
ISBN 0-690-03896-8 OP

★★ Single concept, no age given

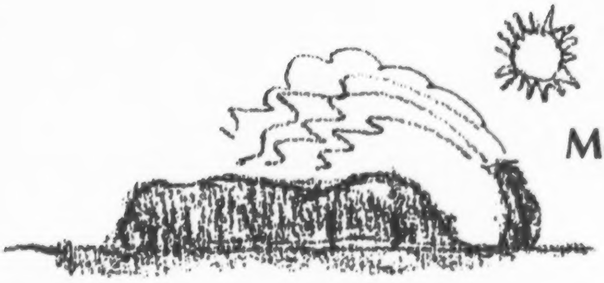
Penguins in simple blue, gray, white, and black illustrations introduce this book on time concepts and telling time by exploring shadows and the sun's movements. Many different clock faces are used to explain different aspects of measuring time, for example, the twenty-four-hour clock and the twelve-hour clock with a.m. and p.m. indicators. These aspects relate to activities throughout a child's day. Three particularly good models for learning how to tell time are introduced: a clock with only the hour hand, a clock face marked in five-minute intervals, and a clock face marked in quarters. Clockwise and counterclockwise movements are also related to other activities in everyday life. A number of good activities of varied sophistication are included; if the reader is just learning to tell time, parts of the book could be skipped.

Ziegler, Sandra. *All of Grandmother's Clocks: A Beginning Book about Time.* Elgin, Ill.: Child's World, 1977.

ISBN 0-913778-76-1 $7.45

☆ Single concept, PS–3

Billy's stay at his grandmother's house provides a rather weak story line as a basis for an introduction to telling time. From seven o'clock when he rises to eight o'clock when he goes back to bed, Billy's actions are punctuated with contrived reasons to tell time. The roles of the long hand moving around the clock face once an hour and the short hand pointing to the name of the hour are presented. Telling time in fifteen-, thirty-, and forty-five-minute intervals is presented without reference to quarter or half hours. The illustrations are as stilted as the text.



Measurement of Time—Concepts

Moments, minutes, days, weeks, months, and years are concepts with which primary-aged children are still coming to terms. Developing these concepts of time is the goal of the books annotated in this section of the bibliography. Gould's *Brendan's Best-Timed Birthday* should motivate children to estimate and time the length of different activities in their day, and Neasi's *A Minute Is a Minute* is sure to initiate a dynamic discussion on how long different activities *seem* to take! The passage of time in two-hour intervals over a twenty-four-hour day is presented by Coats in *The Oak Tree.* Carle and Ward investigate longer intervals such as the passage of a week, and Maestro and Sendak each illustrate time passages over a year. Activities to develop time concepts abound in Burns's *This Book Is about Time.*

Allington, Richard L., and **Kathleen Krull.** *Time*. Illustrated by Yoshi Miyake. Milwaukee, Wis.: Raintree Publishers, 1982.

ISBN 0-8172-1388-0		$14.65
ISBN 0-8172-2495-5	(paper)	9.75

★★ Multiconcept, 1–2

Questions throughout the book ask the reader to tell the time on variously shaped face and digital clocks. Related concepts such as early and late, present and future, and fast and slow are also presented. Names of the days of the week, seasons of the year, and months of the year are reinforced. The familiar activities illustrated in the pleasing, well-designed pictures are the basis of questions that require the understanding of time-related concepts. There are several opportunities for readers to make up stories and share their own experiences about time. Rich, colorful illustrations effectively enhance the text and depict children from many cultural backgrounds.

Anno, Mitsumasa. *Anno's Counting Book.* New York: Thomas Y. Crowell Publishers, 1977.

See Counting—Zero

Aylesworth, Jim. *One Crow: A Counting Rhyme.* Illustrated by Ruth Young. Philadelphia, Pa.: J. B. Lippincott Co., 1988.

See Counting—Zero

Burns, Marilyn. *This Book Is about Time.* Illustrated by Martha Weston. Boston: Little, Brown & Co., 1978.

ISBN 0-316-11752-8		$13.45
ISBN 0-316-11750-1	(paper)	7.70

★★★ Multiconcept, 5+

Historically, yellow, orange, red, purple, and green were the names the people of the Soviet Union gave to the days in their five-day week—this is one of the many intriguing historical facts interwoven with the information and activities in this book about time. The ten chapters can be read one section at a time and are cross-referenced for some activities. Throughout the book, the readers are asked to interview others or to look at their personal uses of time to find whether time is noted by intervals or events or is measured by clocks or calendars. How people used time in the past is linked to their measurement of time. The historical and cultural facts surrounding the origins of daylight saving time, the International Date Line, and the time zones in the United States are given. Different inventions for measuring the day are described, and the activities include making and experimenting with sundials, water clocks, sand clocks, and clocks from pendulums. A later activity suggests observing and collecting data on the moon's cycles for a month. Estimation is included; the reader is asked to predict the length of events that would occur in seconds or minutes. The reader is invited to participate in activities to develop these concepts or is involved in designing experiments to test the estimates. The end of the book considers longer intervals. A fascinating description of a one-year-long movie about our universe from its origin to the present is included. Perceptions of time are extended to scientific descriptions of the internal clocks of plants, animals, and humans, and of jet lag.

Carle, Eric. *The Very Hungry Caterpillar.* New York: Philomel Books, 1987.

ISBN 0-399-20853-4	$14.95

★★ Single concept, K–2

A hungry caterpillar emerges from an egg on Sunday. The next pages show the one apple he ate on Monday, the two pears on Tuesday, and so on. Each fruit on the back and front of a page has a hole through it. In stair-step fashion, each page from 1 to 5 is longer so that the reader can see, for instance, that three plums are more than two pears. On Saturday, the caterpillar eats ten different foods before he spins his cocoon. Two weeks later he emerges as a colorful butterfly, shown on the last page. Brilliant collages effectively illustrate the story. More than 4 million copies of this classic, which was originally published in 1969, have been sold.

Cassidy, John. *The Time Book.* Illustrated by Roger Bollen. Palo Alto, Calif.: Klutz Press, 1991.

See Telling Time

Coats, Laura Jane. *The Oak Tree.* New York: Macmillan Publishing Co., 1987.

ISBN 0-02-719052-8		$13.95

★★ Single concept, PS–1

An oak tree dominates each lush watercolor illustration. Starting with the six-o'clock sunrise and the waking robins, time moves in two-hour intervals though a twenty-four-hour time period. The oak tree is the center of each changing scene, as children play croquet at twelve o'clock and bats swoop past at ten o'clock. The book ends with the robins and the dawn of a new day at six o'clock. The pleasing illustrations and the simple text peacefully trace the concept of an entire day's activities.

Florian, Douglas. *A Summer Day.* New York: Greenwillow Books, 1988.

ISBN 0-688-07564-9		$11.95
ISBN 0-688-07565-7	(library binding)	11.88

★★ Single concept, PS

The passage of time is clearly and simply illustrated in this charming rhyme, which takes the reader from sunrise to sunset on a summer day as a family takes a trip to the countryside. The changes in morning and evening light are captured by the pleasing illustrations in crayon and ink.

Gerstein, Mordicai. *The Sun's Day.* New York: Harper & Row Publishers, 1989.

ISBN 0-06-022404-5		$12.95
ISBN 0-06-022405-3	(library binding)	12.89

★★ Single concept, PS–1

Abstract pastel illustrations dramatically present each scene from sunrise to sunset. The day progresses hour by hour, with each busy scene detailing the activities for that hour. The sun's daylight journey is the focus of these layouts, and the sun in each symbolizes a new entity in surprising forms. In one of the first scenes, clouds in the shape of a hen and a rooster hover over the sun, which appears as a chick popping out of an egg; the landscape below shows a farmstead starting to come to life at dawn. A scene at two o'clock shows the skyline of San Francisco with a peach orchard across the bay; the sun appears as a ripe, luscious peach. The fascinating illustrations should capture the interest of readers and could promote discussions of these scenes and of what happens in the readers' lives during each time period.

Gould, Deborah. *Brendan's Best-timed Birthday*. Illustrated by Jacqueline Rogers. Scarsdale, N.Y.: Bradbury Press, 1988.

ISBN 0-02-737390-8 $13.95

★★★ Single concept, PS–1

Time becomes Brendan's obsession after he is given a digital watch and stopwatch for his birthday. He announces the time it takes him and his father to make cake frosting, to spread the frosting, and for him to lick the bowl. At his birthday party, he times his guests; soon the other children take turns timing other play activities. The pastel illustrations reflect young boys and girls who playfully and humorously interact with each other. Their timed activities could be used to encourage estimations on how many seconds or minutes different events take in the classroom or at home.

Hooper, Meredith. *Seven Eggs*. Illustrated by Terry McKenna. New York: Harper & Row Publishers, 1985.

See Number Concepts

Kherdian, David, and **Nonny Hogrogian.** *Right Now*. New York: Alfred A. Knopf, 1983.

ISBN 0-394-85596-5 $10.95
ISBN 0-394-95596-X (library binding)

★★ Single concept, PS–K

"Yesterday a daisy died," "But right now a whole field is blooming, and butterflies are everywhere, and hummingbirds and caterpillars, and everything is singing its own kind of song, and I am singing too." The charming descriptive text contrasts thoughts of the past and future with living in the present. Black-and-white drawings of figures illustrate the past or future and alternate with scenes in pastel watercolors showing the present (right now). The text and its illustrations effectively contrast the time concepts of tomorrow, yesterday, last night, last week, next year, and this morning with the concept of the present—right now.

Krensky, Stephen. *Big Time Bears*. Illustrated by Maryann Cocca-Leffler. Boston: Little, Brown & Co., 1989.

ISBN 0-316-50375-4 $14.95

★★ Single concept, PS–K

The concepts of a second, a minute, an hour, a day, a week, a month, and a year are thoughtfully presented through the Bears' family activities. A second, a very short amount of time, is illustrated by Sarah Bear yawning, Mother Bear pulling up a window shade, and Father Bear touching his toes. Each successively larger time unit is defined in terms of the smaller unit and is illustrated with appropriate examples. The pastel pictures delightfully detail each activity. This is an excellent book to introduce and explore different lengths of time through examples to which the reader can relate.

Lloyd, Penny. *What Time Is It?* Illustrated by Charlotte Stowell. New York: Gallery Books, 1991.

ISBN 0-8317-7359-6 $4.98

☆ Multiple concept, K–2

A busy daytime scene is opposite the same scene at night. The reader is asked to note the many differences between day and night. The detail in the colorful illustrations adds interest as well as affording material to extend the discussion about the concepts. Sequences of scenes effectively illustrate several activities of children from morning through afternoon through evening. Other sequences include days of the week, months of the year, and yesterday, today, and tomorrow. Additional time concepts introduced in the book include early and late, fast and slow, and young and old. A table of contents and an index help organize this multiple-concept book about time. Children from underrepresented groups—minorities and handicapped—are included throughout the book.

Maestro, Betsy, and **Giulio Maestro.** *Through the Year with Harriet.* New York: Crown Publishers, 1985.

ISBN 0-517-55613-8 $12.95

★★ Single concept, PS–1

Time in months and in changing seasons is the focal point of this book. The simple story opens with Harriet feeling sad because it will be a whole year before her next January birthday. The story progresses through each month, with the text and colorful illustrations reflecting the basic activities and weather of the months and seasons. In no time at all one year passes, and it is time for Harriet's January birthday party again.

Moncure, Jane Belk. *Wise Owl's Days of the Week.* Illustrated by Helen Endres. Chicago: Children's Press, 1981.

ISBN 0-516-06563-7 $10.60

☆ Single concept, PS–2

Part of the Wise Owl series, this book depicts Little Owl learning the days of the week. Each day, Little Owl learns a verb that begins with the same letter as the day; that is, he marches on Monday, tiptoes on Tuesday, ..., and sings on Sunday. Simple, colorful illustrations complement the text describing Little Owl's activities of the day. The music for Wise Owl's days-of-the-week song is included; however, one of the notes of the song is partially lost in the binding of the book. In a culminating activity, the reader is asked to match the days of the week to a list of new words that start with the same letters. In this way, the readers compose their own lyrics to the days-of-the-week song.

My First Look at Time. New York: Random House, 1991.
ISBN 0-679-81164-8 $6.95

☆ Single concept, PS–K

Photographs of children involved in activities throughout their day are simply illustrated on a white background. Dominant in each picture is a clock face whose hands show times such as seven o'clock, eight o'clock, and eleven o'clock. Not every sequential hour is shown, nor is there any written recording of time. Each photograph simply notes the special time with appropriate activities, such as dinner time, bath time, and bedtime. On each opposite page is a photograph of labeled objects that are associated with the activity; for bath time, the photograph shows toothpaste, hairbrush, towel, soap, boats, and so on.

Neasi, Barbara J. *A Minute Is a Minute.* Illustrated by Clovis Martin. Chicago: Children's Press, 1988.
ISBN 0-5[illegible]3491-X $2.95

★★ Single concept, PS–3

Rhyming verse explores the meaning of a minute as perceived by a child. The paradox of time being both very long and very short, depending on whether a child is waiting for cookies to bake or having fun watching television, is clearly shown. This carefully crafted book subtly depicts handicapped, young, and old individuals in multiracial and nonstereotypical illustrations. This delightful book should initiate a dynamic discussion.

Pluckrose, Henry. *Time.* Illustrated by Chris Fairclough. New York: Franklin Watts, 1988.
ISBN 0-531-10452-4 $10.90

☆ Single concept, PS–6

Leaning over to turn off the alarm, the little boy wipes his sleepy eyes. The text asks, "What time do you get up in the morning? How can you tell the time?" This introduction draws the reader into a photographically illustrated exploration of units of time measurement: seconds, minutes, hours, days, weeks, months, and years. The importance of timekeeping is constantly reinforced through questions and examples. Brilliantly colored photographs of children and adults of various races depict everyday references to time measurement and its use, and the conversational text challenges the reader to participate.

Rothman, Joel. *A Moment in Time.* Illustrated by Don Leake. New York: Scroll Press, 1973.

ISBN 0-87592-034-9	$7.95

☆ Single concept, PS–2

Colorful paintings with broad brush strokes and very few words capture a moment in time—an apple falling in slow motion. This pleasing book graphically represents sequence and the concept of time. The idea of such a fleeting moment might be very difficult to understand for the preschool and primary children for whom the book was designed. Since these concepts need to be experienced, this book could be used to promote a discussion and activities about time. The boy's picking up and eating the apple seems to be a completely separate event that destroys the attempt to capture "a moment in time."

Russo, Marisabina. *Only Six More Days Left.* New York: Greenwillow Books, 1988.

ISBN 0-688-07071-X		$11.95
ISBN 0-688-07072-8	(library binding)	11.88

★★ Single concept, PS–3

Ben gleefully counts down the six days to his birthday and constantly talks about the impending event. Through each successive day, the text and expressive illustrations clearly show that Ben's older sister Molly is tired of the topic and does not want to take part in the celebration. The problem is tactfully resolved, and Molly joins her brother and his friends at the party. Children from various cultures are included in the attractive illustrations painted in gouache. Although one of the main purposes of this book is to explore sibling relationships, it can also be used to generate countdowns to other celebrations. Molly's letter at the end of the book might motivate a primary class to do some letter writing about time experiences.

Schwerin, Doris. *The Tomorrow Book.* Illustrated by Karen Gundersheimer. New York: Pantheon Books, 1984.

ISBN 0-394-85459-4		$10.95
ISBN 0-394-95459-9	(library binding)	10.99

☆ Single concept, PS–K

Delicate pastel illustrations echo a young boy's thoughts of what tomorrow will bring. The opening scenes show nighttime, as children prepare for bed. The remaining scenes portray tomorrow as "Tomorrow you can do lots of things there wasn't time to do today." Children from various cultures are represented throughout the book; happy as well as troublesome situations are depicted. All these contribute to the elusive concept of *tomorrow*.

Sendak, Maurice. *Chicken Soup with Rice: A Book of Months.* New York: Scholastic, 1986.

ISBN 0-590-63088-1		$5.95
ISBN 0-590-41033-4	(paper)	2.50

★★ Single concept, K–3

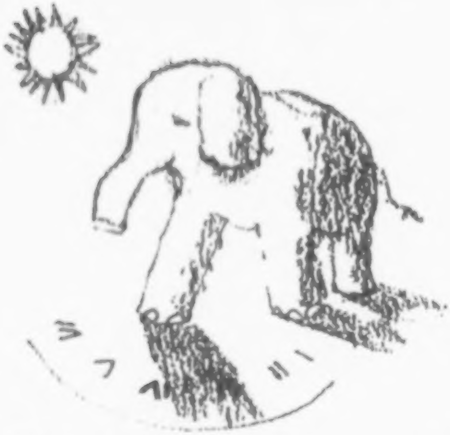
One of Sendak's characteristically rambunctious little boys takes the reader through the months of the year while eating, serving, or playing in chicken soup with rice. The story is usually realistic in describing activities for each month; however, some months are pure fantasy. Simple drawings complement the story line. The rhyme is compelling and the pattern predictable; the words change enough to keep the reader concentrating. Young listeners and readers catch on to the rhythm quickly and enjoy "singing" the story. This is a good story for children to rewrite using their own examples for each month.

Ward, Cindy. *Cookie's Week.* Illustrated by Tomie dePaola. New York: G. P. Putnam's Sons, 1988.

ISBN 0-399-21498-4 $10.95

☆ Single concept, PS–1

On Monday the mischievous black-and-white cat Cookie falls into the toilet; on Tuesday Cookie knocks over flowerpots. The days of the week continue sequentially with a new disaster each day. The story ends by contemplating tomorrow, which is Sunday, and hoping that Cookie will rest. The simple text, complemented by pastel illustrations, could promote a discussion on the reader's life on different days of the week.



Measurement of Time—Extensions and Connections

The origins of time measurement connect history, science, and mathematics and provide the theme for most of these books. The history of the calendar is thoroughly presented in the work of Apfel and others. Directions for making many wonderful timing devices of the past are found in Jennings's *Time*. Time zones around the world are perceptively represented by Baumann. Time concepts are extended by Anno in *Anno's Sundial*, which connects this type of timepiece to latitude, longitude, and angles.

Anno, Mitsumasa. *Anno's Sundial.* New York: Philomel Books, 1987.
ISBN 0-399-21374-0 $16.95

★★★ Multiconcept, 4–8

Three-dimensional pop-ups illustrate how the motions of the sun and the earth led people to discover ways to tell the time of day. Instructions are given for using compasses and protractors to make simple sundials for use at the North Pole. Directions for more sophisticated horizontal sundials adjusted to the reader's specific longitude are carefully explained. Time zones, longitudes and latitudes, changing seasons, and the movements of the sun and earth are explained through pop-ups, world maps, and models using oranges and tennis balls. Much of the text and the sophisticated concepts it describes would be difficult to follow if the explanations and experiments were not so clear and effective. The integration of social studies, mathematics, art, and science makes this book unique. It is best savored slowly, with adequate time spent on each page to explore the concepts and to digest each new experience.

Apfel, Necia H. *Calendars.* New York: Franklin Watts, 1985.
ISBN 0-531-10034-0 $9.90

★★ Multiconcept, 5–8

Social studies, science, and measurement are interrelated in this book about calendars. The explanations should give the reader a sense of history and an appreciation of the role of measurement in science. Readers may choose to read selected chapters because the content load of the book is quite heavy. The text flows easily and conversationally. Illustrations complement the text by showing how the measurements were made to determine our calendar. The 85-page narrative includes the following chapters: "The First Calendars," "The Phases of the Moon," "The 365-Day Year," "Seasons and the Calendars," "Egyptian and Roman Calendars," "The Gregorian Calendar," "The Days of the Week," "Hour by Hour," and "Other Calendars." The historical roles of different cultures and customs, political systems, religions and beliefs, and the knowledge of our solar system are incorporated in explaining how calendars were constructed or adapted. The origins of words and the choices of numbers are explained—whether they came from superstition or science.

Baumann, Hans. *What Time Is It around the World?* Illustrated by Antoni Boratynski. New York: Scroll Press, 1979.

ISBN 0-87592-061-6	$6.95

★★ Single concept, K–5

Beautiful, bright, eye-catching illustrations graphically show the time of day in various parts of the world as the reader progresses through twenty-four different time zones. The point of the book—that when it is 7:00 a.m. in one place, it is progressively an hour later in other places in the world as one moves east—is not clearly expressed. Some explanation would help the reader understand that at the same time it is 7:00 a.m. in London, it is 8:00 a.m. in Morocco, 9:00 a.m. in the Middle East, and so on. With such adult guidance, this book is recommended to help children understand time around the world.

Breiter, Herta S. *Time and Clocks.* Milwaukee, Wis.: Raintree Publishers, 1987.

ISBN 0-8172-3262-1	(library binding)	$15.33
ISBN 0-8172-3287-7	(paper)	9.27

☆ Multiconcept, 2–5

A wealth of information about time and timekeeping devices is in this simply-stated text with colorful illustrations. The time concepts include day, night, year, seasons, hour, and minute. Where appropriate, these concepts are connected to the relationship between the earth and the sun. Historical devices for measuring time, such as water clocks and candles, are described and illustrated, as well as present-day clocks such as digital, atomic, and quartz-crystal. The book describes the internal parts of a watch and a pendulum clock and the way these parts work together to keep time. Other measurement ideas include the calendar, time zones of the world, carbon-dating, and nature's internal clocks. The last two pages, which are unrelated to the main body of the book, compare the metric and customary systems of measurement and provide a chart and a description for changing units from one system to the other. A pronunciation key, glossary, and bibliography are included. Other books on this topic are more effective and interesting when exploring similar material. This short book attempts to include so much information about time and timekeeping devices that much of it is dealt with too superficially to guarantee understanding.

Brindze, Ruth. *Story of Our Calendar.* Illustrated by Helene Carter. New York: Vanguard Press, 1949.

ISBN 0-8149-0278-2 $13.95

★★ Single concept, 4–8

Among the intriguing facts included in this interesting history of the calendar are that there were once thirteen 30-day months in some years and that in 1752, the day after 2 September was 14 September. The roles of politics, customs and superstitions, science, and religion are interwoven with the struggles of the Egyptians, Babylonians, and Romans to establish and perfect a calendar to measure time. The importance of the accuracy of measurement and how time was measured is prominent throughout the book. The origins of leap year, longitude and latitude, the 7-day week, and the International Date Line, and a discussion of the world calendar are some other subjects in this book. Pastel drawings complement the text, and only a few reveal that the book was published before 1950.

Burns, Marilyn. *This Book Is about Time.* Illustrated by Martha Weston. Boston: Little, Brown & Co., 1978.

See Time Concepts

Fisher, Leonard E. *Calendar Art: Thirteen Days, Weeks, Months, Years from around the World.* New York: Four Winds Press, 1987.

ISBN 0-02-735350-8 $13.95

☆ Single concept, 4–6

After a brief introduction, which explores the need for the accurate recording of time, the author presents the various ways cultures throughout history have responded to this need. Calendars of many cultures and regions are presented and discussed: Aztec, Babylonian, Chinese, Egyptian, French Revolutionary, Gregorian, Hebrew, Islamic, Julian, Mayan, Roman, and Stonehenge. Each presentation includes a history of the calendar, how the calendar works, and artwork. The world calendar also appears in this interesting history- and mathematics-related book.

Jennings, Terry. *Time.* Illustrated by David Anstey. New York: Franklin Watts, 1988.

ISBN 0-531-17112-4 $9.90

★★ Single concept, 1–3

Large print and colorful illustrations document different ways to measure time in hours, minutes, and seconds. Readers are challenged to experiment with different *clocks* of their own, and simple directions are given for a picture clock, a shadow clock, a sundial, a sand clock, two kinds of water clocks, a candle clock, and an amusing alarm clock—with a warning not to make this clock without the help of a grown-up. The clarity of the simple text breaks down with the explanation of a pendulum clock. The superficial explanation is confusing. The inclusion of an experiment to time heartbeats and the comment on plants telling time seem out-of-place. The glossary of terms and the index are very helpful.

Kirst, Werner. *Time.* Woodstock, N.Y.: Beekman Publishers, 1977.
ISBN 0-247-12726-4 $7.95
☆ Multiconcept, 4–7

Several short (2–5 pages) articles are included in this book. All are related to time measurement. Four articles describe the adventures of school-age "reporters" who visit a watch factory, an atomic clock, Big Ben, and an airliner. These visits might provide motivation for budding reporters to write their own articles on relevant time topics. One article describes how to construct a sundial; another, written in cartoon form, describes a water clock. This interesting and well-written book gives an excellent explanation of why the time of day differs around the world. Maps, illustrations, and color photographs complement the detailed and relatively sophisticated text. American children may be interested in the British spelling (metres, litres, etc.) and vocabulary, and the differences should present little difficulty for the reader.

Perry, Susan. *How Did We Get Clocks and Calendars?* Illustrated by Nancy Inderieden. Mankato, Minn.: Creative Education, 1981.
ISBN 0-87191-746-7 $7.95
☆ Multiconcept, PS–4

Conversational text shows children the need for clocks and calendars in their lives. In a concise review of the history of documenting the passage of time, the text introduces the reader to the Sumerian calendar, the lunar month intercalation and the subsequent Julian calendar, the concept of weeks, and the origins of the names of the days. In a discussion of keeping track of hours, the text describes the earliest known clocks. A great deal of interesting information is presented in the book. Some children may choose to read selected chapters; others may be able to assimilate more of the information.

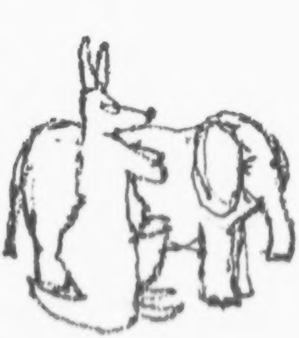
Weiss, Malcolm E. *Solomon Grundy, Born on Oneday: A Finite Arithmetic Puzzle.* Illustrated by Tomie de Paola. New York: Thomas Y. Crowell Publishers, 1977.
See Number Systems

Ziner, Feenie, and **Elizabeth Thompson.** *Time*. Chicago: Children's Press, 1982.

ISBN 0-516-01651-2	(library binding)	$11.67
ISBN 0-516-41651-0	(paper)	3.95

Single concept, 2–4

Interesting old clocks pictured in multicultural settings are not enough to raise this book to the standard of some of its competitors in exploring the concept of time. The colored photographs of a fine collection of clocks—shadow sticks, sundials, candle clocks, rope clocks, water clocks, and hour glasses—overpower the minimal and careless treatment of telling time. Indeed, this is more a book about clocks than it is a book about time.



Money

Money's connection to history and to other cultures is the main theme of Elkin's *Money* and four other books in this category. Kyle and James's *The Kids' Complete Guide to Money* builds connections to decision making about money in the reader's world and includes definitions and examples from finance. The younger reader will delight in the realistic illustrations of bills and coins in Hoban's *Twenty-six Letters and Ninety-nine Cents*; values of money and equivalent values among coins and bills are explored by Hoban and by the Maestros. Schwartz extends these ideas with fanciful examples to depict what can be bought for various sums of money and illustrates these values in graphic terms.

Adler, David A. *All Kinds of Money*. Illustrated by Tom Huffman. New York: Franklin Watts, 1984.

ISBN 0-531-04627-3 $8.90

☆ Single concept, 1–4

From the mediums of exchange of primitive societies to the currency used in today's world, this book discusses the history of money. The concepts introduced include self-sufficiency, barter, inflation, currency, check, and credit card. Although the readability level of this little 32-page book is controlled in regard to vocabulary, the concepts are so compact and briefly treated that little understanding is developed. In addition, the black-and-white line drawings do little to aid comprehension or add interest.

Briers, Audrey. *Money*. New York: Franklin Watts, 1987.

ISBN 0-531-18113-8 $10.40

☆ Single concept, K–6

This book traces the development of currency from the early history of bartering to the present use of credit cards. The author encourages the reader to project new developments in kinds of money for the future. Relationships between the evolving complexity of society and the need for currency and banking to respond to societal needs are clarified. This book is informative, and the content is carefully developed and reasonably clear. Both the written text and the art work, which includes drawings and photography, are crowded. The final pages include an index, a glossary, and a list of recommended books.

Cantwell, Lois. *Money and Banking*. New York: Franklin Watts, 1984.
ISBN 0-531-04827-6 $9.90
☆ Multiconcept, 4–8

Three chapters are devoted to an account of money as it developed up to the Middle Ages and the Renaissance. Chapters 4 and 5 focus on the development of coins and paper money in the United States. The two following chapters deal with the function and development of banks in the United States. Chapter 8 provides a brief description of the Federal Reserve and its relationship to the banking system. Of the four remaining chapters (twelve in all), one discusses the history of checking, another addresses the counterfeiting problem, and the last ones are about coin collecting. This book in the series First Books, like its counterparts, attempts to cover too much material of too complex a nature for an introductory book. The content load is tremendous. The supporting illustrations, sketches, and black-and-white photographs afford some relief. Although the information presented may be accurate, the amount may discourage all but the highly motivated student from completing the book. The afterword provides entertaining food for thought by describing a school bank set up in the early 1980s by some sixth graders. A glossary of terms and an index facilitate the use of the book.

Elkin, Benjamin. *Money*. Chicago: Children's Press, 1983.
ISBN 0-516-01697-0 (library binding) $11.67
ISBN 0-516-41697-9 (paper) 3.95
★★ Multiconcept, K–4

Though this book's primary focus is the history of money, it also explains kinds of money, why we use money, and what we do with it. To start the reader on a trail of adventure, Elkin introduces bartering and early forms of money, such as cows or salt, that show the need for a monetary system. Examples such as the probable origin of the first coins in Lydia and paper money in China help the reader understand that monetary systems gradually evolved to expedite progress throughout the world. Different coins and bills from various countries show the gradual refinement of monetary systems with particularly intriguing close-up color photographs that will be of interest to the young numismatist. A history of money in the United States includes how it is coined and printed. A later section of the book describes how we use money, including interest payments, stock investments, and checks. A glossary and an index follow the text.

Hoban, Tana. *Twenty-six Letters and Ninety-nine Cents.* New York: Greenwillow Books, 1987.

ISBN 0-688-06361-6 $13.00
ISBN 0-688-06362-4 12.88

★★★ Single concept, PS–3

Glossy, brightly colored numerals were photographed with the corresponding value of coins. The values 1 to 30, 35, 40, 45, 50, 60, 70, 80, 90, and 99 are represented. Some values are shown in more than one way—for example, 6 is six pennies or one nickel and one penny; 10 is ten pennies, two nickels, or one dime. Usually the least possible number of coins is shown—17 is one dime, one nickel, and two pennies; 80 is three quarters and one nickel. The book could easily lead the reader to explore other ways of showing the same value. *Note:* After reaching 99, the reader can turn the book around to explore the twenty-six letters of the alphabet (lower and upper case) with a corresponding pictured object (e.g., Ww and a picture of a wagon).

James, Elizabeth, and **Carol Barkin.** *Managing Your Money.* Illustrated by Santos Paniagua. Chicago: Children's Press, 1977.

ISBN 0-8172-0279-X $13.31

☆ Multiconcept, 4–6

In seven chapters, the authors answer these questions: What is money? Why do we have it? How do you earn it? How do savings and checking accounts work? What are credit cards? How do you manage money? Each complex topic is dealt with simply and directly. As an introductory book on serious topics of concern, the book whets the appetite of the young reader. The problems of calculating expenses, profit, and loss are real eye-openers as the young reader is guided through some hypothetical but highly relevant business enterprises such as walking or bathing dogs. The content of each successive chapter becomes more sophisticated and detailed. Humorous illustrations in shades of gray and orange complement the potentially serious text, maintaining a lighter mood than these topics might otherwise suggest. Some readers may choose to read selected chapters, although the accountants of tomorrow will enjoy the challenge of this exciting and effectively written book.

Kyte, Kathy S. *The Kids' Complete Guide to Money.* Illustrated by Richard Brown. New York: Alfred A. Knopf, 1984.

ISBN 0-394-96672-4 (library binding) $8.99
ISBN 0-394-86672-X (paper) 4.95

★★ Single concept, 5+

Mathematics involving money is incidental in this book except for a chapter on spending, budgeting, and earning money. The main theme of this book is helping kids manage and make more intelligent decisions about money; the book could be used as the basis for integrating mathematics, the environment, and consumer sense. The information presented here could be used in data collection and analysis of middle school children's spending decisions. Questions are posed on interests and talents; the reader makes decisions on the basis of personal choices. Product research, comparative shopping, returning items, coupons, rebates, and sales are part of consumer awareness. A chapter on advertising analyzes claims in advertisements. A discussion on secondhand stores, sharing, and bartering looks at doing more with less and suggests options in your community for free or inexpensive activities. Cartoonlike drawings in black and white add humor and interest to the well-written text.

Maestro, Betsy, and **Giulio Maestro.** *Dollars and Cents for Harriet.* New York: Crown Publishers, 1988.

ISBN 0-517-56958-2 $12.95

★★★ Single concept, 1–3

Harriet needs five dollars to buy something special. She finds 100 pennies in her bank; one dollar down and four to go! Five interesting stories show us how Harriet, the elephant, earns money. They also show the coins Harriet receives for each job. Each time, she is given a multiple of *one* type of coin that, when counted, is equivalent to one dollar: twenty nickels, ten dimes, four quarters, two half-dollars. The pictures of the coins are on pages by themselves, which allows the reader to touch them when counting the value of the coins. After Harriet has reached her goal of five dollars, she trades the coins for dollar bills and goes to the toy shop to buy that special something—a beautiful, colorful kite. This is one of a series of successful Harriet books that help children understand basic concepts.

Mitgutch, Ali. *From Gold to Money.* Minneapolis, Minn.: Carolrhoda Books, 1985.

ISBN 0-87614-230-7 $6.95

☆ Single concept, K–3

The progression from bartering to using gold, coins, and paper money is the focus of this "start to finish" book. The limitations of each system and why the changes occurred are described. Brightly colored and framed illustrations show people trading or buying materials and services in a variety of ways. This book is a good introduction to the history of money.

Schwartz, David M. *If You Made a Million.* Illustrated by Steven Kellogg. New York: Lothrop, Lee & Shepherd Books, 1989.

ISBN 0-688-07017-5
ISBN 0-688-07018-3 (library binding) $14.88

★★★ Single concept, 1–5

Similar to the format of *How Much Is a Million?*, Schwartz and Kellogg's fantasy examples and detailed, pastel drawings cleverly introduce money from 1 penny to 1 million dollars. The examples illustrated by Marvelosissimo, the Mathematical Magician, and his eight friends include tasks to earn a particular amount of money, such as feed the fish to earn 1 penny or bake a cake to earn $5. Also, the examples include items to buy, such as a hippopotamus for $1000 or tickets to the moon for $1 000 000. Photographs of coins and bills show relationships; 1 dollar bill equals 4 quarters, 10 dimes, 20 nickels, or 100 pennies. As the denominations get larger, comparisons are used; a fifty-foot stack of pennies would be $100; a school bus filled with nickels would be $1 000 000. Marvelosissimo and his friends also become involved with writing checks and earning interest on money deposited in a bank. Three pages of notes from the author explain how he generated the data in the examples. These notes also explain such concepts as monetary systems, banks, interest and compound interest, checks and checking accounts, loans, and income tax. All the notes are extensions of the excellent examples throughout the book.

Viorst, Judith. *Alexander Who Used to Be Rich Last Sunday*. Illustrated by Ray Cruz. New York: Atheneum Publishers, 1979.

ISBN 0-689-30602-4 $7.95

★★ Single concept, K–2

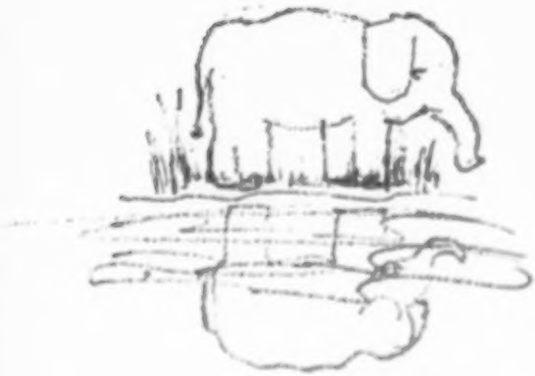
Alexander believes, "It isn't fair that my brother Anthony has two dollars and three quarters and one dime and seven nickels and eighteen pennies," but Alexander has only bus tokens. The story line and the pen-and-ink drawings effectively illustrate the humorous plight of Alexander, who used to be rich last Sunday when he received a dollar from his grandparents. His money soon disappears as he pays a ten-cent fine for swearing at his brother, rents Eddie's pet snake for an hour for twelve cents, and wagers and loses fifteen cents. It is left for the reader to determine whether Alexander has lost all his money by accounting for all his expenses.

Geometry and Spatial Sense

WHAT kind of pie do you like best? Apple? Cherry? Huckleberry? Banana cream? When you cut a piece of pie, you cut an angle. One way to describe an angle is to say that it is the opening between two lines that meet each other." The thirty-six third graders from a class in rural southern Illinois listened carefully as their teacher read *Angles Are Easy as Pie* to them. One of the third graders drew a diagram on the chalkboard showing a pie cut into four pieces. Another child drew a pie cut into six pieces. The children decided that if they were hungry and if it was their favorite pie, they would choose a piece from the pie cut into four pieces. Another of the book's activities involved them in exploring a triangle's angles. After carefully labeling each angle of a triangle with a number and shading each angle, the children tore the angles from the triangle and arranged them to find that the three angles formed half a pie.

Each semester, preservice teachers at the University of Northern Iowa participate in this same activity from this book in their mathematics class. Like the third graders, they become involved and express delight with the book's characters and activities. The college students extend the ideas to explore quadrangles and pentagons and to form a generalization on how to determine the number of degrees for a polygon with *n* sides. Not only are they starting with an intuitive, concrete approach to form their own conjectures, they are also becoming acquainted with activities appropriate for elementary school children.

Froman's *Angles Are Easy as Pie* is just one of the many quality children's books that contain activities in geometry. Books that relate directly to geometry are divided into three groups. Children's books that introduce spatial sense are classified into one set; those books that simply identify shapes are another set; the third set extends geometric concepts and explores properties among geometric ideas. Other books that are related incidentally to geometry are organized into three sections—origami, optical illusions, and drawing.



Beginning Spatial Concepts

Over and under, up and down, and in and out are some of the spatial concepts in these beginning concept books. Both Hoban and McMillan use photographs of our world to capture these spatial ideas. In *Becca Backward, Becca Frontward,* McMillan presents the concepts as pairs of opposites, whereas Hoban's photographs require the reader to identify and name the concepts in the everyday scenes.

Allington, Richard L. *Opposites.* Illustrated by Eulala Conner. Milwaukee, Wis.: Raintree Publishers, 1979.

See Beginning Measurement

Hill, Eric. *Spot Looks at Opposites.* New York: Putnam Publishing Group, 1986.

ISBN 0-399-21681-2 $3.75

☆ Single concept, PS–K

Full, empty; in, out; over, under; up, down; soft, hard; fast, slow; and *open, shut* are the opposites illustrated by the activities of the dog Spot and his animal friends. Brightly colored, simple illustrations and a minimal text clearly depict each concept. This irregular-shaped, sturdy cardboard book should appeal to the young child.

Hoban, Tana. *All about Where.* New York: Greenwillow Books, 1991.

ISBN 0-688-09697-2
ISBN 0-688-09698-0 (library binding)

☆ Single concept, PS–3

Above, on, behind, under, out, against, across, between, in, through, beside, among, below, over, and *around* are the ideas explored in colorful photographs. The words are listed vertically along the outer borders of the first and last pages of this beginning concept book. Hoban's photographs are reproduced on narrower pages so that the list of concepts is always next to each new scene. Whether the photograph is of a child riding in a baby seat on a bicycle, children playing on a merry-go-round, a dog peeking his head out of a jacket pocket, or a ferry passing under a bridge, each new scene offers many options to be explored. The opportunities for communication about these concepts are many; children will be challenged to see how many of the relationships can be found in each picture.

_____. *Over, Under, and Through and Other Spatial Concepts.* New York: Macmillan Publishing Co., 1973.

ISBN 0-02-744820-7 $11.95

★★★ Single concept, PS–2

Tana Hoban's superb photographs explore the environment. *Over, under, through, on, in, around, across, between, beside, below, against,* and *behind* are some of the spatial concepts explored in Hoban's photographic essay. Children are spotlighted in everyday situations and positions as they lean against, run across, and climb through. The appealing black-and-white photographs focus so clearly on each spatial concept that children will have no difficulty comprehending.

_____. *Push, Pull, Empty, Full: A Book of Opposites.* New York: Macmillan Publishing Co., 1972.

See Beginning Measurement

MacDonald, Suse, and **Bill Oakes.** *Puzzlers.* New York: Dial Books for Young Readers, 1989.

ISBN 0-8037-0689-8 $13.95
ISBN 0-8037-0690-1 (library binding) 13.89

★ Single concept, PS–1

As in *Numblers,* the numerals from 1 to 10 are transformed and combined into attractive, imaginative pictures. On the left page of each two-page spread, three pictures illustrate the gradual change of each numeral according to an attribute such as tall, backward, or upside-down. On the opposite page, various stylized numerals have been arranged into a picture of an animal. The reader must search the illustrations of the toucan, frog, or beaver to find examples of numerals that are tall, backward, or upside-down. A key to the pictures is in the back of the book, since some compositions are quite abstract. The young reader should be delighted with the imaginative shapes and challenged to find the numerals exemplifying the different attributes.

McMillan, Bruce. *Becca Backward, Becca Frontward.* New York: Lothrop, Lee & Shepard Books, 1986.

ISBN 0-688-06282-2 $11.75
ISBN 0-688-06283-0 (library binding)

★★ Single concept, PS–1

Cheery, colorful photographs of four-year-old Becca in her country environment illustrate this beginning concept book of opposites. The photographs of Becca filling a glass with milk and then drinking it clearly represent the picture captions of *full* and *empty*. Another pair of photographs show Becca playing with different-sized balls to indicate *small* and *big*. Other concept pairs include *bottom* and *top, above* and *below, whole* and *half,* and *narrow* and *wide.*

Manley, Deborah. *The Other Side*. Illustrated by John Astrop. Milwaukee, Wis.: Raintree Publishers, 1979.

See Beginning Measurement

Tester, Sylvia R. *Over, Under, and All Around*. Illustrated by Rose-Mary Fudala. Elgin, Ill.: Child's World, 1977.

ISBN 0-913778-66-4 $7.45

☆ Single concept, PS–2

Simple, one-word descriptions define the location of a clown and his monkey friend and their actions as they chase the clown's hat through town. *In, inside, within, out, outside,* and *without* are some spatial concepts included. The last seven pages review the action for readers as they are asked, "Who is in?" "Who is out?" "Is the clown in or out?" Other books dealing with spatial concepts explore more common terms in a more attractive and interesting way.

Shapes

Learning to recognize and name two- and three-dimensional shapes is the focus of this category. One-dimensional ideas are limited to a few examples of curved or broken lines. The general concept of shape with regard to form is explored by Seuss, Brown, and Hoban. Some authors, such as the Barretts, simply focus on one geometric two-dimensional shape. Others, such as Carle, explore many different shapes. Two- and three-dimensional shapes are often presented in the same book. Reiss, in *Shapes,* is one of the few authors who attempt to relate two-dimensional shapes to the surfaces of three-dimensional shapes. Illustrations of many real-life examples of each shape are featured in most books. Connections to the world around us are effectively made in the photographic essays of Pluckrose and Hoban. The types of experiences in these books can lead to the discussion of shapes in a child's world.

These beginning books often oversimplify concepts. They are not designed to explore the different properties of a shape nor the interrelationships among shapes. Squares do not appear in the category of *rectangles;* distinctions are not made between a shape and its interior; and most figures are placed so their bases are parallel to the bottom edge of the page. These beginning experiences may cause children to overgeneralize. Confusion may also result from using illustrations of three-dimensional objects to represent two-dimensional shapes. Was it the author's intent to consider only the outline? Is the young child able to discern the difference? In spite of these limitations, these books can serve as an introduction to shape.

Allington, Richard L. *Shapes*. Illustrated by Lois Elhert. Milwaukee, Wis.: Raintree Publishers, 1979.

ISBN 0-8172-1277-9 (library binding)
ISBN 0-8172-2487-4 (paper) $9.27

★★ Single concept, K–2

Not only does this book introduce shapes—circle, square, triangle, rectangle, oval, pentagon, hexagon, heptagon, and octagon—it also deals with the concept of size. The reader is asked to estimate which is the smallest pentagon illustrated, or the biggest hexagon, or to determine which shapes can fit into another shape. The book is illustrated in strong colors. Each shape is first shown in black, is named and defined, then is illustrated in full color as part or parts of large, black, silhouetted animals. The directions in the text lead the reader to make some perceptual judgments about the relative size of the shapes, which would be difficult to check. Three-dimensional shapes such as spheres, cones, and cylinders are briefly introduced; also, nonmathematical shapes such as petals, hearts, stars, and crescents are included. Finally, the reader is challenged to start a collection of shapes from items in the environment.

Barrett, Peter, and **Susan Barrett.** *The Circle Sarah Drew*. New York: Scroll Press, 1973.

ISBN 0-87592-029-2 $8.95

★★ Single concept, PS–2

In this book, the introductory page poses a series of questions about the circle Sarah drew. On each of the double pages that follow, one of Sarah's friends decides that her circle is a manhole, a duckpond.... Sarah firmly responds, "No." As Sarah rejects her mother's suggestion that her drawing is a nice round circle, the reader is asked an open-ended but confusing question. "What do you think it is?" Each book in this series is extremely attractive and colorful. The Barretts follow the same format in each book: presentation of the shape or line, questions about what it represents, and open-ended questions to challenge the reader further.

_____. *The Line Sophie Drew*. New York: Scroll Press, 1973.

ISBN 0-87592-049-7 $8.95

★★ Single concept, PS–2

See the annotation for *The Circle Sarah Drew* for information about this series.

_____. *The Square Ben Drew*. New York: Scroll Press, 1973.

ISBN 0-87592-012-8 $8.95

★★ Single concept, PS–2

See the annotation for *The Circle Sarah Drew* for information about this series.

Brown, Marcia. *Listen to a Shape*. New York: Franklin Watts, 1979.

ISBN 0-531-02930-1 (library binding) $8.90
ISBN 0-531-02383-4

★★ Single concept, 1–4

The design and beauty of the world are captured in color photographs of nature that introduce the concept of shape. Some specific geometric shapes such as triangles and circles are defined and illustrated by such examples as the wings of a butterfly and the shape of a chrysanthemum. But most of the scenes depict a more general concept of shape with regard to form or the changes and effects of nature. The text and the scenes throughout the book invite the reader to explore ideas: "What shape is the rain?" "What shape is the wind?" Images form in the shadow that falls on a curved tree trunk or the reflection of trees in a pool of water. The plan of nature is shown in the change of a caterpillar to a butterfly. This beautifully illustrated book could motivate readers to explore and discuss the everchanging form of their natural world. The poetry that accompanies the photographs may be too advanced and abstract for the younger children in the suggested age range.

Bruna, Dick. *I Know about Shapes.* Los Angeles: Price/Stern/Sloan Publishers, 1984.

ISBN 0-8431-1526-2 $2.95

★★ Single concept, PS–K

Strong color, simple line drawings, and minimal text effectively focus the preschooler's attention on three basic shapes: round (circle), triangle, and square. Each new shape is effectively introduced by a black-and-white sketch of a child holding a model of the new shape, which is colored in vibrant hues. The examples are common objects from the child's everyday life.

Carle, Eric. *My Very First Book of Shapes.* New York: Thomas Y. Crowell Publishers, 1974.

ISBN 0-690-57367-7 $4.95

★★★ Single concept, PS

Each cardboard page of this small book has been cut in half horizontally. Black silhouettes of a circle, semicircle, triangle, diamond, square, rectangle, crescent, and so on, are printed on the top half of each page. These shapes are to be matched with luxurious, painted illustrations of a kite, a moon, a tepee, an eye, a watermelon slice, a ladybug, a framed picture, and so on, on the bottom half. The half pages are randomly arranged so that the reader has to flip back and forth in order to match the shapes. There is no text or naming of shapes.

Charles, Donald. *Calico Cat Looks Around.* Chicago: Children's Press, 1975.

ISBN 0-516-03436-7 $11.00
ISBN 0-516-43436-5 (paper) 2.95

☆ Single concept, PS–3

Calico Cat looks around the environment and sees a variety of shapes including the typical (triangle, square, circle, rectangle), the unusual (half circle, crescent, oval), and the unique (petal). A simple rhythmic text introduces each new shape illustrated in pastels. The perspective of some pictures is incorrect because side views and top views are inappropriately combined. Other pictures confuse two- and three-dimensional shapes by relating triangles to ice-cream cones and half circles to partial dips of ice cream (hemispheres). The book closes with a review of the shapes.

Clouse, Nancy L. *Puzzle Maps U.S.A.* New York: Henry Holt & Co., 1990.

ISBN 0-8050-1143-9 $15.95

☆ Single concept, 1–3

Puzzle pieces from maps of the United States are the focus of this book on geography and shape. The puzzle pieces of the states are from maps of different sizes and colors. Pieces are rearranged to form designs. The reader is asked to identify the shapes by the name of the state and to find all the pieces that are the same shape no matter what size, color, or position. The author has successfully connected geography with mathematical tasks.

Disney's Pop-Up Book of Shapes. New York: Disney Press, 1991.

ISBN 1-56282-019-2 $6.95

★★ Single concept, no age given

Familiar Disney cartoon characters share equal billing with circles, triangles, squares, rectangles, and ovals in a circus atmosphere. Informal, but incomplete, definitions and a color silhouette introduce each shape. The pop-ups are most effective. As one page is turned, Pluto jumps through a hoop that is described as a circle. Another pop-up unfolds into a cube whose sides are defined as squares. Some examples are not as carefully illustrated; balloons, balls, tires, cylinders, and hoops are shown on the layout representing circles. In spite of potential confusion about two- and three-dimensional shapes, this book is recommended for its appeal and clever design; adult supervision can minimize conceptual misunderstandings.

Dr. Seuss. *Shape of Me and Other Stuff.* New York: Random House, 1973.

ISBN 0-394-82687-6 $4.95
ISBN 0-394-92687-0 5.99

★★ Single concept, PS–1

Silhouetted shapes of a boy and a girl appear to bounce lightly from page to page as the children explore the shapes of things. Such concepts as "no shapes are ever quite alike" and "some objects have many shapes like gum and smoke" are cleverly illustrated. This is an intuitive exploration of shape rather than a study of explicit mathematical shapes that have unique forms due to their special properties.

Ehlert, Lois. *Color Zoo*. Philadelphia, Pa.: J. B. Lippincott, 1989.

ISBN 0-397-32259-3 $11.95
ISBN 0-397-32260-7 (library binding).

★★★ Single concept, PS–K

Bold color, cutouts, graphics, and clever design effectively introduce various shapes. Three pages, each with a differently shaped cutout, are layered over a fourth page. The first graphic abstraction of a zoo animal is labeled *tiger*. When the reader turns the first page (with a circular cutout), the opposite side of the page is labeled *circle*. The picture on the right-hand page is now labeled *mouse*. When this page with a square cutout is turned, the label is *square*. The opening on the next page is triangular; all three shapes are named and shown on the fourth page. The flip side of each page introducing the die-cut shape's name is one solid bold color. Minimal graphics add some detail to the zoo animals. Other shapes that are introduced are rectangle, oval, star, heart, hexagon, octagon, and diamond. The ten shapes, sixteen colors, and nine animals shown in the book are summarized on the last pages. Ehlert's clever design introducing shapes is a delight.

Emberley, Ed. *The Wing on a Flea: A Book about Shapes*. Boston: Little, Brown & Co., 1961.

ISBN 0-316-23600-4 $14.95

☆ Single concept, PS–3

"A triangle is / The wing on a flea / And the beak of a bird / If you'll just look and see." Similar repetitive, rhyming verse throughout this simple book on shapes introduces triangles, circles, and rectangles. Both two- and three-dimensional forms are used in the real-life examples; that is, circles are depicted by a marble, a bubble, a ball, a balloon, and a Ferris wheel. This could cause some confusion by incorrectly classifying three-dimensional shapes, although the illustrations do depict a flat surface or outline in a two-dimensional shape. The examples, shown in a variety of sizes, shapes, and orientations, are boldly represented in each illustration. Bright turquoise and green enhance the simple black-and-white drawings.

Fisher, Leonard Everett. *Boxes! Boxes!* New York: Viking Press, 1984.

ISBN 0-670-18334-2 $9.95

☆ Single concept, PS–1

"A box can be small / A box can be tall / Narrow and slim / Or filled to the rim." This poem effectively introduces brightly colored boxes of different shapes and sizes. Other illustrations highlight the uses of boxes—from flower boxes to box kites to paint boxes. The illustrations are very effective. Although different shapes are included, the emphasis is on boxes shaped like rectangular prisms. The variety of examples and the emphasis on boxes all around us should lead readers to note examples in their environment.

_____. *Look Around! A Book about Shapes.* New York: Puffin Books, 1987.

ISBN 0-670-80869-5		$10.95
ISBN 0-14-050572-5	(paper)	3.95

☆ Single concept, PS–K

Large, clear print and strong, eye-catching color combine to define the shapes all around us. The exemplary design of this introductory book of shapes is marred by the lack of differentiation between the two- and three-dimensional forms. Throughout the book, three-dimensional objects are pictured and referred to as circles, squares, rectangles, or triangles. Additionally, the definitions for squares and rectangles could be describing rhombuses and parallelograms, respectively.

Gardner, Beau. *What Is It? A Spin-About Book.* New York: G. P. Putnam's Sons, 1989.

ISBN 0-399-21664-2	$10.95

★★ Single concept, PS–3

The ability to transform two shapes into a third shape is the basic element in this book. The reader rotates a shape that is fastened to the page over a design on that page so that another shape is formed. Each left-hand page shows in a series of numbered pictures, the designs that can be formed. These numerals also appear on the right-hand page. When the reader rotates the upper shape to the appropriate numeral, the shape matches the design on the opposite page. On one layout, the reader can manipulate the shape to form a mustache, an egg, a butterfly, a lobster claw, a fish, and a clamshell. This is a cleverly designed book on visual perception.

Gillham, Bill, and **Susan Hulme.** *Let's Look for Shapes.* Illustrated by Jan Siegieda. New York: Coward-McCann & Geoghegan, 1984.

ISBN 0-698-20615-0	$4.95

☆ Single concept, PS-1

Different shapes and their names are on the left-hand side of each two-page spread. A simple text and a colorful photograph of children finding this shape in their environment are on each opposite page. The introduced concepts include *square, triangle, straight, zigzag, wavy, oval, diamond, star,* and *cross.* The shapes vary between two- and one-dimensional ideas; there are no drawings of the basic shapes. The term *round* is used rather than the term *circle.*

Hoban, Tana. *Circles, Triangles, and Squares.* New York: Macmillan Publishing Co., 1974.

ISBN 0-02-744830-4	$11.95

★★★ Single concept, PS–2

Attractive black-and-white photographs of everyday scenes highlight the presence of circles, triangles, and squares. Some pictures feature only one shape but show it in different sizes, as in the frames and rectangular wire mesh of the rabbit cage or in the stack of pipes whose ends are circles of varied sizes. Other pictures include both circles (tires) and rectangles (frames) in the same scene. After studying these pictures, children should become more aware of their environment and the shapes within it. The photography is superb and stands alone without text.

_____. *Round and Round and Round.* New York: Greenwillow Books, 1983.

ISBN 0-688-01813-0		$12.95
ISBN 0-688-01814-9	(library binding)	12.88

★★★ Single concept, K–3

Hoban's colorful photographs clearly capture the concept of roundness. Two- and three-dimensional shapes (circles, spheres, and cylinders) are shown, such as wagon wheels, soap bubbles blown from a ring, and beads strung on a string. The scenes should be appealing to readers of any age. As in Hoban's other books, no text is given. The photographs invite discussion and increase the reader's appreciation of roundness in the environment.

_____. *Shapes and Things.* New York: Macmillian Publishing Co., 1970.

ISBN, none given	$4.95

☆ Single concept, PS–1

Black-and-white images of common shapes in our world were made by a photogram process that does not use a camera. The distinct silhouette of each shape is clearly highlighted so that the differences among the shapes are accented. One layout of dinner flatware may cause the reader to speculate on the functions of the differently shaped forks, knives, and spoons. Only one layout depicts "pure" geometric shapes; the reader may wonder whether circles or spheres or cones or triangles are being photographed.

_____. *Shapes, Shapes, Shapes.* New York: Greenwillow Books, 1986.

ISBN 0-688-05832-9	$11.75
ISBN 0-688-05833-7	11.88

★★★ Single concept, PS–3

Arcs, circles, hearts, hexagons, ovals, parallelograms, rectangles, squares, stars, trapezoids, and triangles are the shapes to explore in this wordless book. Colorful and beautiful photographs of the environment invite the reader to search for these shapes. The pictures explore shape in terms of both function and design. These examples can motivate readers to discuss and explore the world around them.

Kahn, Peggy. *The Care Bears' Circus of Shapes.* Illustrated by Carolyn Bracken. New York: Random House, 1984.

ISBN 0-394-86726-2 $3.95

☆ Single concept, PS–1

Lively scenes illustrate this sturdy cardboard book shaped like Tenderheart Bear. Shapes abound in each circus scene as ringmaster Tenderheart Bear introduces circles, triangles, squares, rectangles, and hearts. The brief text challenges the reader to find the shapes in each double-page illustration. Each shape appears as a tiny red figure that emphasizes the interior of the shape. Circles are the theme in one layout, but it is filled with two- and three-dimensional shapes: balloons, balls, hoops, and circle designs. Other illustrations could also promote misconceptions, for instance, if the reader identifies the cubes rather than the faces of the cubes as squares.

McMillan, Bruce. *Fire Engine Shapes.* New York: Lothrop, Lee & Shepherd Books, 1988.

ISBN 0-688-07842-7 $11.95
ISBN 0-688-07843-5 (library binding) 11.88

☆ Single concept, PS–2

Color photographs depict four-year-old Kaori's exploration of the details and shapes on a fire engine. Each pair of colorful closeups clearly illustrates one dominant shape, such as the circular path of a handle for opening windows and the lug bolts on the wheels. Many opportunities for discussion of the familiar shapes exist. Squares, rectangles, diamonds, triangles, hexagons, ovals, and circles are defined on the last page beside their black silhouetted shapes. For easy reference in this photographic essay, the page number where each shape is featured is included. The definition of a diamond (rhombus) limits it to shapes that stand on a point, and the pictorial examples of a hexagon and a triangle are limited to regular polygons.

Moncure, Jane Belk. *Apes Find Shapes.* Illustrated by Joy Friedman. Chicago: Children's Press, 1988.

ISBN 0-516-05731-6 $8.25
ISBN 0-516-45731-4 (paper)

Single concept, PS–2

Four funny apes help Tracy find shapes in the world around her. The sometimes awkwardly rhyming text names items in our daily lives that have the shapes of circles, squares, triangles, and rectangles. Several examples cause confusion between two- and three-dimensional shapes. Bubbles, balls, and snow people are in the section on circles; a big square box is in the square section; cone-shaped baskets, tepees, and trees are in the triangle section. Additionally, each ape is wearing a hat that is supposed to represent the shapes to be explored, but the hats include a square pyramid, a cube, a rectangular prism, and a circle. The book is inconsistent because numerous good examples are also provided in each section. The question on the last page makes the reader wonder what the major purpose of the book is intended to be: "Can you read these words with Tracy?" These last pages include not only a review of the four shapes and their names but also, within each shape, a review of every item and word name referred to in the text.

_____. *Magic Monsters Look for Shapes.* Illustrated by Diana Magnuson. Elgin, Ill.: Child's World, 1979.

ISBN 0-89565-057-6 $7.45

★ Single concept, PS-3

An introduction of the basic shapes of circles, squares, rectangles, and triangles is followed by representative samples of items that appear in the reader's daily life. Dissatisfaction with the size of the things found sends the monsters looking for monster-sized shapes. The circular shapes found in buttons and tires are thus dismissed in favor of those found in Ferris wheels; the rectangular shapes found in envelopes and bricks are dismissed in favor of those in skyscrapers. Confusion between two- and three-dimensional shapes exists throughout the book. The illustrations are large, lively, and colorful on the pages where the monsters appear in contrast to the informational page, where the definitions of shapes and representative items are more simply depicted.

Petty, Kate, and **Lisa Kopper.** *What's That Shape?* New York: Franklin Watts, 1987.

ISBN 0-531-10281-5 $9.90

☆ Single concept, K–3

Two- and three-dimensional shapes are both introduced in the context of a young child's birthday party. The uncluttered, two-dimensional illustrations focus children's attention on the item being discussed and its shape. Although commendable efforts are made to identify shapes present in the real-world environment, some applications appear to be contrived. In addition, the observations of a semicircle of cake and a crescent-shaped moon may be somewhat sophisticated for the age levels for which this book was apparently designed. A review page presents the items again in the sequence in which they appeared in the story. The items are a square envelope, a rectangular book, a cube-shaped box, an irregular-shaped package, a ball, triangular boat sails, a round cake, a semicircular slice, an ice-cream cone, and a crescent-shaped moon. The names of the shapes are in boldfaced type throughout the book. The pictures of children that accompany the text illustrate the multicultural aspect of this read-aloud book for young learners.

Pienkowski, Jan. *Shapes.* New York: Little Simon, 1987.
ISBN 0-671-68135-4 $2.95

☆ Single concept, PS–K

Each new shape with its name is presented on one page of a two-page spread in this tiny cardboard book. The opposite page is a simple, boldly colored scene in which the shape is featured in several different ways. The reader is introduced to circles, squares, triangles, rectangles, ovals, stars, crescents, spirals, waves, and zigzags. There is no attempt to distinguish among one-, two-, and three-dimensional shapes. An oval is pictured as a chicken egg. Spirals and zigzags, properties of lines, are depicted as curled fern fronds, snails, lightning bolts, and evergreen trees. Originally published in 1973, this Pienkowski book is reprinted as a nursery board book in an 8.5-by-8.5-centimeter format.

Pluckrose, Henry. *Shape.* Illustrated by Chris Fairclough. New York: Franklin Watts, 1986.
ISBN 0-531-10374-9 $9.90

★★★ Single concept, 1–3

"Move your fingers around the edges of the page. What shape have you traced?" The author's first invitation to the reader to explore shape is one of many in this simple questioning text. A double-page spread displays one example each of a square, a circle, a rectangle, and a triangle. Examples of these shapes in the environment are captured in distinctive photographs of bathroom tile, decorative manhole covers, city landscapes, and construction sites. Legos, wooden triangles, and coins are models used to explore tessellations of the plane. Pictures of locks, wheels, a honeycomb, and a telephone motivate the reader to consider questions about the function of shape. The quality photographs and the simple conversational text could stimulate further discovery and discussion.

Reiss, John J. *Shapes.* New York: Bradbury Press, 1974.
ISBN 0-87888-053-4 $5.95

☆ Single concept, PS–1

Bold colors and bright graphics introduce the shapes of squares, triangles, circles, rectangles, and ovals; interesting designs dramatically show the shape in various sizes. Some images show the outline of the shape, but most representations include the interior. Real-life examples are used; for squares, the examples are crackers, a checkerboard, signal flags, and windows. Squares, triangles, and circles are also related to three-dimensional shapes. A very effective sequence shows a fox and a mole placing squares one at a time to form the six faces of a cube. Similarly, four triangles form the surfaces of a pyramid. The format for forming the sphere changes. The representation that relates circles and spheres is confusing because circles are stacked but it is not clear that the circles represent the cross section of the spheres rather than the surface. Examples of regular pentagons, hexagons, and octagons are included, as well as pages challenging the reader to find the various shapes in a scene formed from a collection of shapes.

Note: A paperback edition was released by Aladdin Books in 1987 (ISBN 0-689-71121-2); it is assumed that this is a reprint.

Rogers, Paul. *The Shapes Game*. Illustrated by Sian Tucker. New York: Henry Holt & Co., 1989.

ISBN 0-8050-1280-X $12.95

☆ Single concept, PS–1

Examples of each shape—circles, triangles, squares, stars, ovals, crescents, rectangles, spirals, and diamonds—are introduced by verse and graphics on the left-hand pages. Similar examples, varied in color and size, are embedded in colorful, Matisse-like illustrations on the opposite page. The abstract quality of the graphics coupled with the orientation changes in the examples should challenge the reader to find each shape. Three-dimensional examples are included for each shape; a steeple, a Christmas tree, a cone, and a pile of stones are some of the examples for triangles. Although the graphics emphasize the outline to indicate two dimensions, the inclusion of both two- and three-dimensional items may confuse young readers.

Salt, Jane. *Shapes*. Illustrated by Charlotte Stowell. New York: Gallery Books, 1990.

ISBN 0-8317-7358-8 $4.98

☆ Multiple concept, K–2

The concepts of one, two, and three dimensions are introduced in this colorful book. Making shapes with the body or making patterns with shapes are some of the clever activities suggested. Several good examples of shapes in our environment are illustrated, and the reader is encouraged to find others. Some inappropriate examples are naming a witch's hat a triangle and stating that a circle has one side. Overall, this is a fairly ordinary presentation of shapes.

Thomson, Ruth. *All about Shapes*. Illustrated by Penny Ives. Milwaukee, Wis.: Gareth Stevens, 1986.

ISBN 1-55532-339-1 $8.95
ISBN 1-55532-314-6 (library binding)

★★ Single concept, PS–1

Presto the Magician, through sleight of hand, introduces two- and three-dimensional shapes. Tricks with scarves show the two-dimensional shapes: square, circle, triangle, rectangle, and diamond. The performances using containers to hide objects introduce the three-dimensional shapes: cone, cube, sphere, and cylinder. Adult guidance might be needed to alert the reader to the difference between these sets of shapes. The presentation is fun and attractive and has a simple text for beginning students. A chart matching the shape and its name, with separate pages for the two- and three-dimensional shapes, reinforces shape identification. A bibliography offers further opportunities for exploring shapes through books.

van der Meer, Ron, and **Atie van der Meer.** *Fun with Shapes: A Spinning Wheel Book.* New York: G. P. Putnam's Sons, 1990.

ISBN 0-399-21787-8 $5.95

☆ Single concept, PS–1

Spin the wheel and answer the question on the opposite page. Three activities in this tiny cardboard book include finding shapes that look alike, that are embedded in a scene, or that have the same outline. A fourth activity is to find shapes that belong together, such as a lace and a shoe or a flower and a stem. Six different shapes appear on each well-designed spinner; they range from clouds, car silhouettes, and flowers to geometric shapes such as circles and squares. The last two pages contain a solution key for the correct matches.

Yenawine, Philip. *Lines.* New York: Delacourte Press, 1991.

ISBN 0-385-30253-3 $14.00
ISBN 0-385-30313-0 (library edition)
ISBN 0-87070-175-4 (Museum of Modern Art)

★★ Single concept, K–4

Picasso's *The Kitchen* is a composition of intersecting curved and straight lines, van Gogh's *Street at Saintes-Maries* is composed of dots and lines, and Morandi's *Still Life with Coffeepot* is a pen-and-ink work composed entirely of lines. These and other famous works of art from the Museum of Modern Art are analyzed to illustrate how lines are used to create art. Straight, curved, zigzag, loop, thin, thick, color, sparkle, and wiggle are some of the terms used to describe lines as they appear in art. Although many of these terms are not mathematical, they extend the concept of line as it appears in art. The range of artwork that Yenawine has selected is wide and exemplifies the ideas being discussed. Readers should enjoy this opportunity to link mathematics and art. Further descriptions of each featured artwork and the artist appear on the book's endpapers.

____. *Shapes*. New York: Delacorte Press, 1991.

ISBN 0-385-30255-X $14.00
ISBN 0-385-30315-7 (library edition)
ISBN 0-87070-177-0 (Museum of Modern Art)

★★ Single concept, K–4

Carefully selected works of art from the Museum of Modern Art illustrate how shapes compose art. Crisp, sharply defined circles or squares dominate the compositions by Malevich and Mondrian, but shapes become more abstract in work by Jean Arp. Yenawine uses black line drawings to show how two-dimensional shapes like circles, triangles, and squares can illustrate three-dimensional shapes. Works by Exter, Picasso, and Dali illustrate how artists use these ideas. *Shapes* presents a delightful opportunity to link mathematics and art. Further descriptions of each featured artwork and the artist appear on the book's endpapers.

Youldon, Gillian. *Shapes*. New York: Franklin Watts, 1986.

ISBN 0-531-00441-4 (library binding) $9.40
ISBN 0-531-02389-3

★★ Single concept, PS–2

Bright primary colors cover each page of this book, and the simple drawings are outlined. Each new shape is introduced in heavy black lines with a cutout interior; this format correctly indicates that the basic shape does not include the interior of the figure. As each new shape is introduced, the reader is invited to count the number of new shapes in a drawing and then to discriminate and name the shapes that can be found in a drawing composed of the previously introduced shapes. The cutouts throughout the book are cleverly done; a sense of curiosity about "What is next?" is created. The two-dimensional shapes introduced are circles, squares, triangles, rectangles, and irregular shapes. This introductory book is appealing, but the triangles are limited to equilateral triangles, and the irregular figure is limited to a cloud shape.

Geometric Concepts and Properties

A large number of excellent books dominate these further excursions into geometry and spatial sense. Charosh's *Ellipse,* Parker and Kennedy's *Logo Fun,* and Phillips's *Exploring Triangles* are typical of the majority of these books, which are activity oriented in their approach to geometric properties and relationships. Each topic is explored and extended to help the reader develop a more complete concept; for example, Sitomer develops the concept of circles from an intuitive definition to the exploration of properties that the reader may encounter more formally in high school.

Exploring different dimensions is effectively illustrated in Adler's *Three-D, Two-D, One-D.* Orii and Froman's experiments and explanations will broaden the reader's perceptions of geometry to topological ideas. Science and geometry are integrated by Laithwaite. Number and geometry, other cultures, and history are connected in Diggins's *String, Straightedge, and Shadow: The Story of Geometry.* Captivating activities in geometry and spatial sense abound in *Anno's Math Games* and in Burns's *The I Hate Mathematics! Book* and *Math for Smarty Pants.* Puzzle activities by Saunders, Tompert, and Walters offer opportunities to investigate combining and changing shapes. Children and adults should enjoy all these books.

Adler, David A. *Three-D, Two-D, One-D.* New York: Thomas Y. Crowell Publishers, 1975.

ISBN 0-690-00543-1 $12.89

★★★ Single concept, K–3

Humorous explorations of an inquisitive goat and his two equally curious, professorlike companions introduce the reader to the concepts of one, two, and three dimensions. Comparing the dimensions of different sizes of books and boxes, the trio first explores three dimensions. The effect of changing height, width, or thickness on volume is clearly illustrated; blocks are used effectively as a repeated unit to measure boxes. Area and two-dimensional surfaces are measured by counting square units. Finally, straight lines and curved lines, examples of one dimension, are measured by comparisons. The well-written and logically developed text is complemented by clever and humorous illustrations of the trio's exploits.

Anno, Mitsumasa. *Anno's Math Games.* New York: Philomel Books, 1987.

See Number Theory, Patterns, and Relationships

_____. *Anno's Math Games III.* New York: Philomel Books, 1991.

ISBN 0-399-22274-X $19.95

★★★ Multiconcept, 1–4

As pictures drawn on grids are stretched and shrunk from top to bottom or from side to side, Kriss and Kross explore what remains the same and what changes. This analysis gradually leads to more abstract sketches that are compared using elementary topological ideas. A second chapter explores triangles through puzzle pieces, tessellations, and paper folding to form three-dimensional figures. In a third chapter, mazes are analyzed to solve the Königsberg bridges and other network problems. Mazes are reduced to simpler forms so that readers can learn how to draw and solve such problems. The relatively simple concepts of left and right gradually become more complex in the final chapter. Soon the reader is involved in deciding what is right or left for people in different positions and in determining how to give directions along a path. The afterword connects the concepts in the simple text and illustrations to more sophisticated mathematics and applications. The format is the same as Anno's other game books, and like the others, is a delightful introduction to mathematical ideas.

Burns, Marilyn. *The I Hate Mathematics! Book.* Illustrated by Martha Hairston. Boston: Little, Brown & Co., 1975.

See Number Theory, Patterns, and Relationships

_____. *Math for Smarty Pants.* Illustrated by Martha Weston. Boston: Little, Brown & Co., 1982.

See Number Theory, Patterns, and Relationships

Charosh, Mannis. *Ellipse.* Illustrated by Leonard Kessler. New York: Thomas Y. Crowell Publishers, 1971.

ISBN 0-690-25856-9 OP
ISBN 0-690-25857-7 OP

★★★ Single concept, 1–4

Depending on how you look at it, the rim of a drinking glass seems to have many shapes; "but as you tilt the glass slowly back to its drinking position, the width of the circle—from left to right—remains the same, but the circle seems to flatten from top to bottom. This new shape is an ellipse." Long ones, short ones, fat ones, and thin ones—ellipses come in all sizes. Through a series of easy and interesting experiments that can be performed with readily available "props," Charosh introduces the young reader to various families of ellipses and clearly illustrates the relationship of the ellipse to the circle, the parabola, and the hyperbola. The directions for the activities are clearly given in conversational text and simple, humorous line drawings.

_____. *Straight Lines, Parallel Lines, Perpendicular Lines.* Illustrated by Enrico Arno. New York: Thomas Y. Crowell Publishers, 1972.

ISBN 0-690-77994-1 OP

★★★ Single concept, 1–4

"If all objects with straight edges were to disappear, you could still make a straight line. All you would need is a piece of string." Charosh's simple introduction to the straight line is characteristic of his informative and challenging way of motivating children to explore mathematical concepts using readily available "props." If you have a checkerboard and checkers, you are well equipped to explore the world of straight, parallel, and perpendicular lines. Charosh invites children to look at the world around them to help them understand the importance of the concepts they are discovering. Paper-folding activities introduce the readers to parallel and perpendicular lines. The illustrator complements the text well with his simple black-and-white illustrations with occasional splashes of color.

Cornelius, Carol. *Polka Dots, Checks, and Stripes.* Illustrated by Diana Magnuson. Elgin, Ill.: Child's World, 1978.

See Number Theory, Patterns, and Relationships

Demi. *Where Is It? A Hide-and-Seek Puzzle Book.* New York: Doubleday, 1979.

ISBN 0-385-14846-1 OP
ISBN 0-385-14847-X OP

★★ Single concept, PS–3

Intricate designs, some in brilliant colors and others in black and white, are the theme of this perception book. The only text is "where is it?" next to a design. The reader is to search for this exact design that is hidden among similar designs. To find the congruent creature or object, the reader will need to discriminate by color, shape, position, and design. The intricacy of the detail in the illustrations creates a challenge in discrimination and perception. Solutions are in the back of the book.

Diggins, Julia E. *String, Straightedge, and Shadow: The Story of Geometry*. Illustrated by Corydon Bell. New York: Viking Press, 1965.
ISBN 0-670-67858-9 $9.95

★★ Multiconcept, 4–9

Geometry in nature is the focus of the opening chapter in this well-written 160-page book. The geometry of flowers, seashells, and crystals comes alive in two-color illustrations and prose that paints poetic pictures. Discoveries made across time and culture are woven into story form to help the reader gain insight into the people's lives and thinking. The amusing stories that are conjectured and told in the book include that of the Greek geometer Thales and how he used shadows and proportion to measure the height of the Great Pyramid. Primitive measuring instruments that use string and straightedge are shown in their cultural settings and related to geometric ideas the way Thales believed geometric ideas could be abstracted from material things around us. The origins of the word *mathematics;* Pythagoras's explanation of his famous theorem to the Secret Brotherhood; discussions of Platonic solids, geometric constructions, and number patterns; the breakup of the Secret Brotherhood on the discovery of irrational numbers; and Eratosthenes' estimate of the circumference of the earth are some of the fascinating stories told through illustration and poetic license. This is an excellent source for appreciating and integrating history, measurement, geometry, and applications. The index should be helpful for readers, both students and teachers. A suggested list of associated readings is at the end of the book.

Froman, Robert. *Angles Are Easy As Pie*. Illustrated by Byron Barton. New York: Thomas Y. Crowell Publishers, 1976.
ISBN 0-690-00916-X $12.89

★★★ Single concept, K–3

As friendly alligators contemplate slicing a pie, they begin to explore angles and their uses. An angle is informally defined as the opening between two lines that meet each other; real-life examples of angles between planes are also illustrated. This well-written and cleverly illustrated book includes angle sizes from 0 to 360 degrees, although degree measures are never mentioned. Angle use is illustrated by the steepness of road grades and by flight navigations. Readers are encouraged to participate in activities that include cutting apart triangles, quadrangles, pentagons, and so on, to determine the total degrees in each polygon. In each situation, readers are to form a conjecture about the number of sides and the total size of the angles and then to explore examples to check their thinking. The directions for these activities are logically developed through an easily read text and complementary illustrations.

_____. *Rubber Bands, Baseballs, and Doughnuts. A Book about Topology.* Illustrated by Harvey Weiss. New York: Thomas Y. Crowell Publishers, 1972.

ISBN 0-690-71353-3 OP
ISBN 0-690-71354-1 OP

★★★ Single concept, 1–4

Readers are encouraged to discover such concepts in topology as genus 0, genus 1, and genus 2 shapes. A wonderful combination of simple, logically developed text and hilarious illustrations holds the attention of even the most reluctant reader or mathematician. The antics and dialogue of the poor puzzled birds who romp clumsily through the illustrations furnish lighthearted humor that highlights the relevance of the topic discussed. Simple, workable experiments can reinforce the meaning of the concepts introduced.

Gardner, Beau. *The Turn About, Think About, Look About Book.* New York: Lothrop, Lee & Shepard Books, 1980.

ISBN 0-688-41969-0 OP
ISBN 0-688-51969-5 OP

☆ Single concept, all ages

Bold graphics in two or three colors form a simple design on each page. Each time the book is rotated 90 degrees, the reader's perception of the page's content will change. For example, the four views of one design are labeled "a closed eyelid," " a somersaulting caterpillar," "entering a tunnel," and "the sun passing by a window." This is a cleverly designed book that could promote thinking about "What did you see?"

Hoban, Tana. *Shadows and Reflections.* New York: Greenwillow Books, 1990.

ISBN 0-688-07089-2		$12.95
ISBN 0-688-07090-6	(library binding)	12.95

★★ Single concept, PS+

Distortions may appear when shapes are reflected in mirrors, windows, puddles, or ponds, but certain attributes are unchanged. Similarly, elongated or abbreviated images are found in shadows. Hoban captures these images in her stunning color photographs. This collection presents an excellent opportunity for the reader to analyze shape by comparing and contrasting objects with their shadows and reflections.

Laithwaite, Eric. *Shape: The Purpose of Forms.* New York: Franklin Watts, 1986.

ISBN 0-531-10182-7 $10.90

★★★ Multiconcept, 5–8

Part of a series designed to connect science and our everyday world, this book also bridges the artificial gap that often exists between mathematics and its real-world applications. The text is written in a highly readable, informative style that could furnish the impetus for many classroom activities and discussions interrelating mathematics and science. For example, students would enjoy and learn from the activity on testing the strengths of various cylinders placed in vertical and horizontal positions. On the same page, examples, diagrams, and photographs explain how we use this shape and how its properties are related to the functions it serves. Spheres, cubes, cones, rectangular prisms, spirals, and other forms are all presented in a manner that should help students build an appreciation of the function of shape in the world around them. This text serves well to promote interdisciplinary understanding. Students should be encouraged to evaluate the few instances of sex-role stereotyping present in some photographs.

Orii, Eiji, and **Masako Orii**. *Simple Science Experiments with Circles*. Illustrated by Kaoru Fujishima. Milwaukee, Wis.: Gareth Stevens, 1989.

ISBN 1-55532-857-1

★★★ Single concept, 1–4

A simple circle holds many fascinating surprises that are revealed through a series of experiments. Walking through a sheet of paper, exploring Möbius strips, analyzing interlocking rings, and experimenting with intriguing knots are some of the activities that the reader will be compelled to try. Each experiment has special step-by-step directions and clear illustrations using cloth, paper, string, and apple skins to explore the properties of a circle. The discovery format reinforces the importance of scientific method; the glossary and index are supportive for beginning scientists. Some photographs are included; most of the pastel illustrations depict children from different cultures experimenting with circles.

Parker, Pat, and **Teresa Kennedy.** *Logo Fun*. New York: Scholastic, 1985.

See Technology and Mathematics

Phillips, Jo. *Exploring Triangles: Paper-folding Geometry*. Illustrated by James Rolling. New York: Thomas Y. Crowell Publishers, 1975.

ISBN 0-690-00645-4 $11.89

★★ Single concept, K–3

Paper-folding activities provide an interesting introduction to angle bisectors, perpendicular bisectors, and the medians of a triangle. The instructions for the activities and the accompanying drawings clearly illustrate the properties of the triangles being explored. To use this book, the reader should be familiar with the use of a ruler and a compass and be able to construct a right angle and triangles. Though the instructions are clearly written and logically developed, the recommended K–3 age level is misleading because of the variety and complexity of concepts introduced (right angle, perpendicular lines, rays, and vertices).

_____. *Right Angles: Paper-folding Geometry*. Illustrated by Giulio Maestro. New York: Thomas Y. Crowell Publishers, 1972.

ISBN 0-690-60916-7 OP
ISBN 0-690-60917-5 OP

★★ Single concept, 1–4

Three charming pandas stand out from the bright orange and yellow background as they tell the readers right away that "to have fun with this book you will need quite a lot of paper.... You will need scissors, too, and a pencil." The energetic pandas guide readers through folding activities that produce a right angle, a rectangle, and a square. Readers are invited to experiment with finding ways to fold a rectangular shape into congruent halves. The conversational text holds readers' interest and attention as they are invited to look around the environment to find some of the shapes that have been introduced. The illustrations are humorous and appealing and help to clarify the important points that are made in the text.

Pluckrose, Henry. *Pattern*. Illustrated by Chris Fairclough. New York: Franklin Watts, 1988.

See Number Theory, Patterns, and Relationships

Saunders, Kenneth. *Hexagrams*. Stradbroke, England: Tarquin, 1983.

ISBN 0-906212-27-8 (paper) $3.50

☆ Single concept, 5+

This collection of puzzles can be solved by using a hexagram, a hexagon cut into eight pieces. Two differently dissected hexagrams are provided in the center of the book; each is cut into eight pieces, including such shapes as parallelograms, equilateral and right triangles, kites, and pentagons. The book includes thirty-nine puzzles and their solutions. The puzzles, which are appropriate for adults as well as children, are color-coded to match the appropriate hexagram. Instructions are also given for making new pieces.

Sitomer, Mindel, and **Harry Sitomer.** *Circles*. Illustrated by George Giusti. New York: Thomas Y. Crowell Publishers, 1971.

ISBN 0-690-19430-7
ISBN 0-690-19431-5 (library binding)

★★★ Single concept, 1–5

A pebble dropped in water forms circles that all have the same center. This image dramatically introduces the concept of circles. Simple directions are given for using a compass, and the reader is shown how to draw various circles and designs. Diameters and radii are clearly illustrated and included in the development of more complex designs. Major discoveries that the reader can make by participating in the suggested activities include these: any point on the circle forms a square corner when it is connected to the end points of the diameter; a compass can be used to divide a circle into six equal parts; and a square can be drawn so that its end points are on the circle. Illustrations are simple, clear, and effectively support a logically developed and readable text.

_____. *What Is Symmetry?* Illustrated by Ed Emberly. New York: Thomas Y. Crowell Publishers, 1970.

ISBN 0-690-87612-2 OP
ISBN 0-690-87613-0 OP

★★★ Single concept, 1–4

"Forward March! Left, Right, Left, Right, Left, Right." Ed Emberley's gregarious and thoughtful alligator marches the young reader into an interesting adventure in exploring symmetry. The engaging green fellow starts exactly where he knows he should, with something the children already know—the hokey- pokey song. "I put my left hand in. I take my left hand out...." From this simple beginning and other clear examples, the children are introduced to the idea of a line of symmetry. Matching the opposite sides of a leaf, a butterfly, and some capital letters introduces line symmetry. Symmetry, symmetric figures such as ellipses and circles, and the path of a moving object are introduced through paper-folding activities. Point symmetry is developed through balances and turns; plane symmetry is briefly introduced. The humorous antics of the alligator amuse the reader as the alligator expresses some of the puzzlement, interest, and enlightenment the readers will feel as they work through this challenging book.

Srivastava, Jane Jonas. *Spaces, Shapes, and Sizes.* Illustrated by Loretta Lustig. New York: Thomas Y. Crowell Publishers, 1980.

See Measurement

Testa, Fulvio. *If You Look around You.* New York: Dial Books for Young Readers, 1983.

ISBN 0-8037-0003-2		$10.95
ISBN 0-8037-0432-1	(paper)	3.95

★★★ Single concept, PS–2

Ink-and-dye paintings illustrate this unique book on geometric concepts. Points, lines, and two- and three-dimensional shapes appear in appealing fanciful scenes. The book opens with the first evening star shown as a point in the distance when a child looks through a telescope. In another scene we see two points at a distance, but as the two points, Charlotte and her dog, approach, we see the leash forming the "line" between them. A cylinder is shown as a drum and a cube as a die. Our world appears as a sphere. The final page reinforces the idea from the first page, since the sphere that is our earth is seen as a mere point from outer space. Each detailed scene is introduced by a single descriptive sentence.

Tompert, Ann. *Grandfather Tang's Story*. Illustrated by Robert Andrew Parker. New York: Crown Publishers, 1990.

ISBN 0-517-57487-X $12.95

★★ Single concept, PS–2

Watercolor paintings illustrate this delightful story about fox fairies that Grandfather Tang shares with Little Soo. The essence of the adventurous tale of the two foxes, Chou and Wu Ling, is their challenge to outdo each other by changing themselves into different animals. Both foxes are pictured in the delicate illustrations, and each is represented by the seven tangram pieces. As the tale proceeds, they change into such forms as a rabbit, a dog, a squirrel, a hawk, and a crocodile. As each transformation occurs, the tangram pieces are rearranged to depict the new form. Readers can trace a copy of the tangram pieces so that they can explore the different shapes using their own pieces.

Trivett, Daphne H. *Shadow Geometry*. New York: Thomas Y. Crowell Publishers, 1974.

ISBN not available OP

★★★ Single concept, 1–4

Simple illustrations expand the clear directions of this interesting text, which describes a variety of activities using shadows to explore shape. You and your friend (Y. F.) are invited to become involved. You can take turns tracing around each other's shadow while standing or sitting or while taking any number of positions. Shadow shapes can be made on a screen when a polygon is placed between it and the light source. The directions suggest moving the polygon to see what changes in shape and size will occur. Shadows on spheres are also explored. This book is in the fine collection of mathematics books published by Crowell. As other books in the Young Math series, it is activity and discovery based.

Van Note, Peter. *Tangrams: Picture-making Puzzle Game*. Rutland, Vt.: Charles E. Tuttle Co., 1966.

ISBN 0-8048-0567-9 $3.25

☆ Single concept, 3–6

This small paperback book offers a collection of tangram puzzles as black silhouettes, with the solutions given later in the book. It has almost no text but does include an apocryphal story about the origin of the tangram puzzle and directions for making the puzzle pieces. It could be a good resource for students who have reading difficulties. One original feature of this book is the inclusion of several puzzles that have a number of figures grouped to form a scene, with each figure requiring one seven-piece tangram set.

Walter, Marion. *Look at Annette*. New York: M. Evans & Co., 1971.

ISBN 0-87131-071-6 $5.95

★★★ Single concept, PS–3

Children will delight in this adventure in discovery learning. A pocket on the inside cover of the book contains an unbreakable mirror. The reader is invited to meet the challenges of the text by experimenting with the placement of the mirror. No further explanation is given, leaving the responsibility of discussing the concept of symmetry to the teacher or other adult readers after the child discovers it through the explorations of a little girl's fun with her toys.

_____. *Make a Bigger Puddle, Make a Smaller Worm*. New York: M. Evans & Co., 1970.

ISBN 0-87131-073-2 $5.95

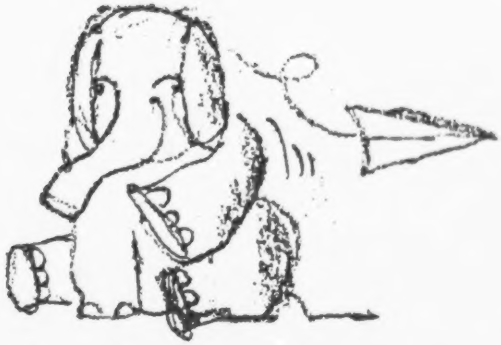
★★★ Single concept, PS-3

A mirror attached to the inner cover allows the reader to explore the questions on each page of this book. Interesting problem-solving situations using mirror reflection abound; namely, making a tower of blocks higher or wider, making a puddle bigger or smaller, and changing a set of three dots into six, five, or two dots. A simple text complements colorful illustrations in this creative approach to exploring symmetry.

_____. *The Mirror Puzzle Book*. Stradbroke, England: Tarquin, 1985.
ISBN 0-906212-39-1 $4.95

★★★ Single concept, 2+

Mirror images of the book's title, the title page, and the directions for using the book cleverly introduce this colorful book on symmetry. As in her other books, Walter provides a mirror attached to the inner cover that the reader can use to create the desired designs. Each double page has 12 puzzle designs that the reader is to reproduce using one basic design and the mirror. Depending on the visual perception skills of the reader, several attempts at mirror placement may be needed before obtaining the correct image. The construction of the designs for the twelve different puzzles varies in difficulty. Some of the 144 puzzle designs in the book are impossible; a scrambled chart at the end of the book lists the solvable puzzles. The reader is encouraged to predict which designs are solvable before using the mirror.



Incidental Geometry—Origami

Explicitly following step-by-step directions and illustrations can transform a sheet of paper into a cube or a crane. Not only will readers find these paper-folding activities motivating, but as they ponder the diagrams and fold their papers, they also will be strengthening their spatial sense.

Anno, Mitsumasa. *Anno's Math Games III.* New York: Philomel Books, 1991.

See Geometric Concepts and Properties

Araki, Chiyo. *Origami in the Classroom, Book I.* Rutland, Vt.: Charles E. Tuttle Co., 1965.

ISBN 0-8048-0452-4 $11.50

★★ Single concept, 2+

Designed to teach origami to American children, this book is well planned for use by teachers The origami themes in this volume correspond to the fall school semester, with activities for autumn through Christmas. Each activity lists appropriate grade levels, materials needed, and estimated time for the activity; the estimates of time appear excessive. The labeled diagrams are illustrated in two colors with dotted lines and arrows to indicate folds and directions of folds. The step-by-step diagrams clearly complement the written text, although younger children may need adult assistance in following the written directions. The cross-cultural focus of these activities is excellent, although the idea of an origami Santa Claus is a little startling.

_____. *Origami in the Classroom, Book II.* Rutland, Vt.: Charles E. Tuttle Co., 1968.

ISBN 0-8048-0453-2 $8.95

★★ Single concept, 2+

Activities for winter through summer are the theme of this second volume of origami by Araki. A colorful full-page illustration introduces each new set of directions for projects such as George Washington riding a horse and a box for valentines. See the annotation for *Origami in the Classroom, Book I* for a more complete review.

Murray, William D., and **Francis J. Rigney.** *Paper Folding for Beginners*. New York: Dover Publications, 1960.

ISBN 0-486-20713-7 (paper) $2.50

☆ Single concept, 1+

Photographs of completed projects and drawings of step-by-step, labeled diagrams illustrate more than forty projects involving paper folding. This is not a traditional origami book, because some projects require more than one piece of paper and others involve paper cutting or tearing. For some projects, the narrative refers the reader back to previous projects and figures. Although readers of many ages will be fascinated with the projects in this book, the directions are not as detailed as in other books. For young readers, adult direction will be needed.

Sakade, Florence. *Origami, Japanese Paper Folding.* Vol. 1. Rutland, Vt.: Charles E. Tuttle Co., 1957.

ISBN 0-8048-0454-0 (paper) $3.75

☆ Single concept, K–12

One of a series of three, this softcover book furnishes background on origami, a favorite pastime of Japanese children. Step-by-step illustrations and written directions detail the art of Japanese paper folding for fifteen different objects. All the objects are folded from square sheets of paper; each corner and fold is carefully labeled and described in appropriate mathematical language. The designs, which vary from simple folding of fans and sailboats to more complex folding of swans and cranes, reflect a good variety of traditional origami projects. The paper-folding designs are generally easy to do, and with assistance from a teacher or a parent, they would provide an appropriate level of challenge for a child who is new to the craft. The placement of the printed directions apart from the diagrams could be confusing. In the second and third books of the series, this problem has been overcome; a written direction is beside each step of the illustrated process.

_____. *Origami, Japanese Paper Folding.* Vol. 2. Rutland Vt.: Charles E. Tuttle Co., 1958.

ISBN 0-8048-0455-9 $3.75 (paper)

★★ Single concept, K–12

See *Origami, Japanese Paper Folding,* Volume 1, for a complete annotation of this series.

_____. *Origami, Japanese Paper* Folding. Vol. 3. Rutland, Vt.: Charles E. Tuttle Co., 1959.

ISBN 0-8048-0456-7 (paper) $3.75

★★ Single concept, K–12

See *Origami, Japanese Paper Folding,* Volume 1, for a complete annotation of this series.

Sarasas, Claude. *ABC's of Origami*. Rutland, Vt.: Charles E. Tuttle Co., 1964.

ISBN 0-8048-0000-6 $8.50

★★ Single concept, 3–8

From albatross to zebra, origami patterns for twenty-six objects are illustrated with sequenced diagrams. For some of the more complex constructions, the diagrams are difficult for a novice to follow. There is minimal use of arrows to indicate the directions of the folds, only an occasional use of notation such as "front," and vertices are not labeled with letters. A full-color illustration of the completed paper folding and the object's name in English, French, and Japanese introduces each set of directions.

Takahama, Toshie. *Origami for Displays*. Tokyo, Japan: Shufunotomo Co., 1974.

ISBN 4-07-973820-X

☆ Single concept, 3–6

One of three softcover books in a series, this book's theme is ornaments, including stars, flower baskets, and butterflies. A black-and-white photograph of each completed project is included with the diagrams. Minimal directions are given for each project, implying that these books are for the more advanced origami student. A glossary of symbols for directions appears on the inside cover.

_____. *Origami for Fun*. Tokyo, Japan: Shufunotomo Co., 1973.

ISBN 4-07-973808-0

☆ Single concept, 3–6

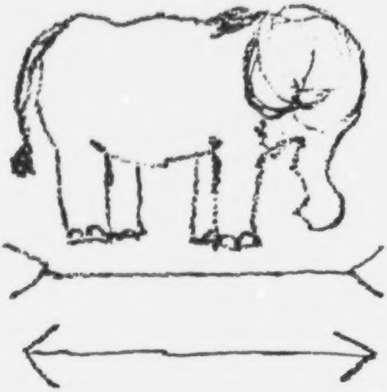
Fish, boxes, swans, and cranes are among thirty-one models featured in this book of paper folding. See *Origami for Displays* for a complete annotation of this series.

_____. *Origami: Toys*. Tokyo, Japan: Shufunotomo Co., 1973.

ISBN 4-07-973814-5

☆ Single concept, 3–6

Puppets, tops, pinwheels, and flying disks are among the fifteen models shown. See *Origami for Displays* for a complete annotation of this series.



Incidental Geometry—Optical Illusions

Are those lines really the same length? Is the open face of the cube on top or in the front? What is your perception? Is it the same from one moment to the next? Numerous familiar and unfamiliar illusions abound in these books where lines or color are effectively used to change the reader's perception. Spatial relationships can be analyzed in Anno's illustrations in *Topsy-Turvies: Pictures to Stretch the Imagination* or *Upside-Downers*. Readers are invited to create their own illusions by the Baums in *Opt: An Illusionary Tale* and by Supraner in *Stop and Look! Illusions*. Some books, such as White and Broekel's *Optical Illusions*, offer scientific explanations for the illusions.

Anno, Mitsumasa. *Topsy-Turvies: Pictures to Stretch the Imagination*. New York: Walker/Weatherhill, 1970.

ISBN 0-8348-2004-8 $6.50

★★ Single concept, K–5

As the reader gazes at one of Anno's busy illustrations, the walls in the scene become floors and the floors become walls. A folding screen standing upright suddenly hangs in midair. A flowing stream through a flat medieval village is suddenly higher on one end than the other and the stream flows into a funnel and out a connecting faucet. Each busy, whimsical scene is intricately designed. Illusions turn each scene that Anno has created into a perplexing fantasy that should captivate and intrigue the reader.

_____. *Upside-Downers*. New York: Philomel Books, 1988.

ISBN 0-399-21522-0 $13.95

★★ Single concept, K–4

Stretching the imagination is the theme of this upside-downside book. The book is designed so that part of each double page can be read by turning the book upside down. Parts of the whimsical illustrations are also upside down; trees are rooted in the sky (or is it the ground?) and chandeliers are attached to the floor (or is that the ceiling?). The two-way quality of playing cards makes them particularly appropriate features in these challenging illustrations. The joker guides the reader through this "Land of Cards," observing what is right-side up or upside down as well as inside out. Some of the illustrations are Escher-like or include mirror images and designs based on Möbius strips.

Baum, Arline, and **Joseph Baum.** *Opt: An Illusionary Tale*. Markham, Ont.: Viking Kestrel, 1987.

ISBN 0-670-80870-9 $11.95

★★★ Single concept, PS–3

Opt, the kingdom of optical illusions, is the setting for familiar illusions in colorful scenes of medieval castles and royalty. The story line queries the reader on which line is longer, whether the lines are parallel, which circle is larger, and how many cubes are in the stack. In addition to geometrical-contrast illusions involving angles, lines, and shapes, illusions involving color, impossible objects, and hidden figures add interest to the illustrations. The closing pages explain the rationale behind each illusion and suggest how readers can create their own illusions.

Brandreth, Gyles. *The Great Optical Illusions*. Illustrated by Rowan B. Murphy and Albert Murphy. New York: Sterling Publishing Co., 1985.

ISBN 0-8069-6258-5 (paper) $3.95

☆ Single concept, 2+

Straight lines appear curved; congruent shapes appear different. Pictures change content before the reader's eyes; impossible constructions appear possible. This is an intriguing collection of classical illusions illustrated in crisp black and white.

Carini, Edward. *Take Another Look*. Englewood Cliffs, N.J.: Prentice-Hall, 1970.

ISBN 0-531-10220-3 $9.90
(paper) $1.50

★★ Single concept, PS–3

Bold graphics in bright yellows, greens, and blues dramatically illustrate familiar optical illusions. Straight lines appear crooked; congruent lines and objects appear unequal. Contrast between colors causes similar colors to appear darker and other colors to "dance." A simple text invites readers to explore each illusion and check their perceptions.

Martin, Bill, Jr. *Optical Illusions*. Illustrated by Robert and Jack Strimban. New York: Holt, Rinehart & Winston, 1971.

ISBN 0-03-085-797-X OP $3.96

★★ Single concept, 4–6

Optical illusions are dramatically introduced by questions that are printed vertically, horizontally, diagonally, or in wavy lines. Individual words or letters are missing, rotated, heaped in piles, or printed as mirror images. The format of each carefully crafted question complements the illusion it introduces. Bold color and simple lines illustrate illusions, including a Möbius strip, parallel lines that appear to be nonparallel, and congruent circles and lines that appear to be of varied sizes. The effects of color and the arrangement of lines on the reader's perception of the images being compared are effectively illustrated throughout the book.

Paraquin, Charles H. *World's Best Optical Illusions.* New York: Sterling Publishing Co., 1987.

ISBN 0-8069-6644-0 (paper)	$3.95

☆ Single concept, 4–12

One hundred seven illusions are simply and effectively illustrated in black-and-white drawings. A question for the reader is posed about each diagram. The illusions are clustered with a brief narrative encouraging the reader to consider the different aspects of that section. In one section, the reader is challenged to find embedded figures in complex drawings. Spatial perception is also exercised in illusions involving comparisons and looking at figures from more than one point of view.

Simon, Seymour. *The Optical Illusion Book.* New York: William Morrow, 1984.

ISBN 0-688-03255-9	$11.88
ISBN 0-688-03254-0 (paper)	5.25

☆ Single concept, 3–7

Illusion in art is shown in stunning examples of work by Escher, Vasarely, Albers, and Riley. "Seeing Is Believing," the introductory chapter, sets the stage for an analysis of how optical illusions work. Cultural differences, blind spots, and eye fatigue are some of the factors explaining illusions. The effects of lines to produce depth and distance or to distort shape and size are carefully presented. A series of diagrams and a concise text carefully analyze what happens to a figure when different backgrounds are added. Black-and-white diagrams effectively, and in some cases dramatically, illustrate the concepts explored. An index helps the reader relocate information on specific illusions.

Supraner, Robyn. *Stop and Look! Illusions.* Illustrated by Renzo Barto. Mahwah, N.J.: Troll Associates, 1981.

ISBN 0-89375-434-X	$9.95
ISBN 0-89375-435-8 (paper)	1.95

★★ Single concept, 1–5

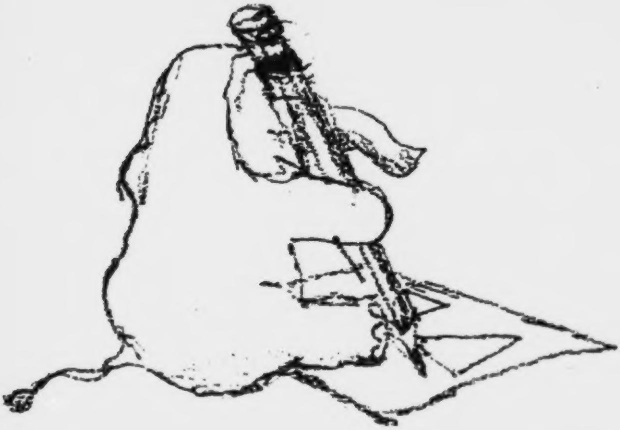
Questions are posed about familiar illusions that involve size comparisons or figures that change, move, or disappear as the reader's perception changes. The book lists readily available materials needed for a variety of interesting experiments. Some of the experiments are making your own movie, magnifying objects, and turning objects upside down. Simple step-by-step directions and cartoon characters guide the young reader through each experiment. The fascinating experiments, simple text, and colorful drawings should appeal to the young reader.

White, Laurence B., and **Ray Broekel.** *Optical Illusions*. Illustrated by Anne Canevari Green. New York: Franklin Watts, 1986.

ISBN 0-531-10220-3 $9.90

★★★ Single concept, 5–8

"Seeing Is Deceiving," the first chapter of this book, introduces illusions with examples that are not what they seem. Color, movement, and light are some of the factors explored in the perception experiments that are clearly described for the reader's participation. The relationship between what the eye sees and what the brain perceives is fascinatingly presented, keeping the attention of the reader from cover to cover. Observation and experimentation, two sets of skills that form connections between mathematics and science, are encouraged and developed. Illustrations are very clear, adding much to the comprehension and delight of the reader, who will be enthralled by phenomena that are not as they seem. Many intermediate and middle-grade students will avidly seek access to this book.



Incidental Geometry—Drawing

Simple geometric shapes, such as circles, rectangles, curved and crooked lines, and so on, are the bases of the completed pictures in these simple drawing books. To follow the step-by-step directions, the reader needs to be able to distinguish the figure that is added and how it is related to the rest of the drawing.

Emberley, Ed. *Ed Emberley's Big Green Drawing Book.* Boston: Little, Brown & Co., 1979.

ISBN 0-316-23595-4		$13.45
ISBN 0-316-23596-2	(paper)	7.70

☆ Single concept, K+

Emberley's drawings afford an opportunity to see and compose two-dimensional designs using open and closed curves. As in Emberley's other how-to-draw books, a simple sketch, such as two intersecting circles or a pair of parallel lines, begins each set of step-by-step diagrams. Underneath each subsequent diagram is a sketch of the shape to be added to the increasingly complex picture. Over a series of four to fifteen diagrams, the two intersecting circles gradually become a picture, such as a woman with a rolling pin or a man with a shovel. Broken and curved lines; intersecting and parallel lines; and shapes, lines, and curves that vary in size and proximity are some of the many discriminations with which the reader interacts to form the final drawings. Eight shapes—triangles, rectangles, circles, semicircles, line segments, arcs, parentheses, and scribbles—are the basic elements of the drawings in this how-to-draw book. Different sections, which vary in complexity, include how to draw people, animals, trees, Dracula, or ships. The drawings and their presentations are often humorous; one section is called Cat A Log (how to draw a cat from a log) and another is similarly titled Dog A Log.

_____. *Ed Emberley's Big Orange Drawing Book*. Boston: Little, Brown & Co., 1980.

ISBN 0-316-23418-4 $13.45
ISBN 0-316-23419-2 (paper) 7.70

☆ Single concept, K–5

Witches, spooks, and pumpkins are some of the illustrations of Halloween, Emberley's main theme in this how-to-draw book. Some of the sketches require dividing circles into halves, fourths, and then eighths; another sketch describes how to draw a rectangular prism. The reader is concerned with two-dimensional spatial relationships throughout the book. See *Ed Emberley's Big Green Drawing Book* for the complete annotation of this series.

_____. *Ed Emberley's Big Purple Drawing Book*. Boston: Little, Brown & Co., 1981.

ISBN 0-316-23422-2 $13.45
ISBN 0-316-23423-0 (paper) 7.70

☆ Single concept, 1+

Purple pirates, parrots, treasure chests, ships, and other things piratical are one of the themes in this how-to-draw book. Emberley includes comments on how to make objects appear smaller or larger by considering their relative size. His sketches of trucks and vans have a three-dimensional perspective; brief comments are included on using a T-square and a triangle as drawing tools. Some final sketches have subtle changes, such as perspective, and the reader is challenged to figure out how to draw the figure. See *Ed Emberley's Big Green Drawing Book* for the complete annotation of this series.

_____. *Ed Emberley's Big Red Drawing Book*. Boston: Little, Brown & Co., 1987.

ISBN 0-316-23434-6 $13.95
ISBN 0-316-23435-4 (paper)

☆ Single concept, no age given

American patriotism is the theme of the red, white, and blue section of the book; Christmas is the theme of the red and green section. A variety of animate and inanimate objects can be drawn with the techniques introduced. Estimation is used to divide a line segment into equal parts; grids are introduced to draw objects in equally sized squares. Directions show how to use a compass to transfer equal lengths. Challenges are given to the reader to combine or adapt various drawings. See *Ed Emberley's Big Green Drawing Book* for the complete annotation of this series.

_____. *Ed Emberley's Great Thumbprint Drawing Book.* Boston: Little, Brown & Co., 1977.

ISBN 0-316-23613-6 $12.95

☆ Single concept, 1+

Ink, paint, or watercolors can be used to form the imprint of a thumb, which is the basis for all drawings in this book. Sequenced sketches illustrate how to embellish the thumbprint to compose each of the simple drawings. See *Ed Emberley's Big Green Drawing Book* for the complete annotation of this series.

Emberley, Rebecca. *Drawing with Numbers and Letters.* Boston: Little, Brown & Co., 1981.

ISBN 0-316-23406-0 $12.45

☆ Single concept, 1+

The letters of the alphabet and the numerals 0 through 9 are combined step by step to form a picture in a manner similar to that in Ed Emberly's drawing books. Often the symbols are written backward; symmetry is also evident in a number of drawings. As young readers progress from one drawing to the next, they will need to discriminate the differences among the sketches and be able to draw and place the lines and curves appropriately.

Kilroy, Sally. *Copycat Drawing Book.* New York: Dial Press, 1981.

ISBN 0-8037-1115-8
ISBN 0-8037-1116-6 (library binding) $8.89

☆ Single concept, PS–3

Middle, top, bottom, circles, curves, and lines are some of the concepts named and used to create the drawings. The format is similar to, but simpler than, Emberley's step-by-step drawing books. Kilroy encourages readers to create other designs and compositions of their own.

Index by Author

Adams, Pam. *Ten Beads Tall* 142

Adler, David A. *All Kinds of Money* 172

_____. *Base Five* 90

_____. *Calculator Fun* 95

_____. *Roman Numerals* 91

_____. *Three-D, Two-D, One-D* 195

Aker, Suzanne. *What Comes in 2's, 3's, and 4's* 74

Allen, Pamela. *Mr Archimedes' Bath* 143

Allen, Robert. *Numbers: A First Counting Book* 61

Allington, Richard L. *Numbers* 62

_____. *Opposites* 135

_____. *Shapes* 182

Allington, Richard L., and Kathleen Krull. *Measuring* 143

_____. *Thinking* 119

_____. *Time* 159

Anno, Masaichiro, and Mitsumasa Anno. *Anno's Mysterious Multiplying Jar* 110

Anno, Mitsumasa. *Anno's Counting Book* 33

_____. *Anno's Counting House* 51

_____. *Anno's Math Games* 110

_____. *Anno's Math Games II* 111

_____. *Anno's Math Games III* 196

_____. *Anno's Sundial* 167

_____. *Topsy-Turvies: Pictures to Stretch the Imagination* 209

_____. *Upside-Downers* 209

Apfel, Necia H. *Calendars* 167

Araki, Chiyo. *Origami in the Classroom, Book I* 206

_____. *Origami in the Classroom, Book II* 206

Archambault, John. *Counting Sheep* 4

Ardley, Neil. *Making Metric Measurements* 144

Arnold, Caroline. *Charts and Graphs: Fun, Facts, and Activities* 103

_____. *Measurements: Fun, Facts, and Activities* 144

Aylesworth, Jim. *One Crow: A Counting Rhyme* 33

Bang, Molly. *Ten, Nine, Eight* 5

Barnes-Murphy, Rowan. *One, Two, Buckle My Shoe: A Book of Counting Rhymes* 20

Barrett, Peter, and Susan Barrett. *The Circle Sarah Drew* 183

_____. *The Line Sophie Drew* 183

_____. *The Square Ben Drew* 183

Baum, Arline, and Joseph Baum. *Opt: An Illusionary Tale* 210

Baumann, Hans. *What Time Is It around the World?* 168

Becker, John. *Seven Little Rabbits* 54

Belton, John, and Joella Cramblit. *Domino Games* 119

Berenstain, Stanley, and Janice Berenstain. *Bears on Wheels* 75

Berg, Olive S. *I've Got Your Number, John* 75

Birch, David. *The King's Chessboard* 111

Blumenthal, Nancy. *Count-a-saurus* 5

Booth, Eugene. *In the Garden* 120

Brandreth, Gyles. *The Great Optical Illusions* 210

Branley, Franklyn M. *How Little and How Much: A Book about Scales* 145

_____. *Measure with Metric* 145

_____. *Think Metric!* 145

Breiter, Herta S. *Time and Clocks* 168

Brenner, Barbara. *Snow Parade* 36

Brett, Jan. *The Twelve Days of Christmas* 20

Briers, Audrey. *Money* 172

Bright, Robert. *My Red Umbrella* 5

Brindze, Ruth. *Story of Our Calendar* 169

Brown, Marc. *One Two Three: An Animal Counting Book* 37

Brown, Marcia. *Listen to a Shape* 183

Brown, Mik. *Little Simon 1, 2, 3* 96

Bruna, Dick. *I Can Count* 37

_____. *I Can Count More* 37

_____. *I Know about Shapes* 184

_____. *I Know More about Numbers* 97

Bucknall, Caroline. *One Bear All Alone* 54

Burningham, John. *John Burningham's 1 2 3* 55

_____. *Just Cats* 62

_____. *Pigs Plus* 97

_____. *Ride Off* 97

Burns, Marilyn. *The I Hate Mathematics! Book* 112

_____. *Math for Smarty Pants* 112
_____. *This Book Is about Time* 160
Butler, M. Christina. *Too Many Eggs* 98
Butrick, Lyn McClure. *Logic for Space Age Kids* 121

Calmenson, Stephanie. *One Little Monkey* 6
_____. *Ten Furry Monsters* 55
Campana Manny. *The Saggy Baggy Elephant's Great Big Counting Book* 37
Cantienti, Benita. *Little Elephant and Big Mouse* 136
Cantwell, Lois. *Money and Banking* 173
Carini, Edward. *Take Another Look* 210
Carle, Eric. *Let's Paint a Rainbow* 98
_____. *My Very First Book of Colors* 121
_____. *My Very First Book of Numbers* 63
_____. *My Very First Book of Shapes* 184
_____. *1, 2, 3 to the Zoo* 6
_____. *Rooster's Off to See the World* 48
_____. *The Very Hungry Caterpillar* 160
Carona, Philip. *Numbers* 91
Carter, David A. *How Many Bugs in a Box?* 6
Cassidy, John. *The Time Book* 153
Cave, Kathryn, and Terry McKenna. *Just in Time* 154
Chandler, Jean. *The Poky Little Puppy's Counting Book* 7
Charles, Donald. *Calico Cat Looks Around* 184
Charosh, Mannis. *Ellipse* 196
_____. *Mathematical Games for One and Two* 121
_____. *Number Ideas through Pictures* 113
_____. *Straight Lines, Parallel Lines, Perpendicular Lines* 197
Christelow, Eileen. *Five Little Monkeys Jumping on the Bed* 21
_____. *Five Little Monkeys Sitting in a Tree* 21
Clement, Rod. *Counting on Frank* 146
Clouse, Nancy. *Puzzle Maps U.S.A.* 185
Coats, Laura Jane. *The Oak Tree* 161
Conran, Sebastion. *My First 1, 2, 3 Book* 38
Corbett, Grahame. *What Number Now?* 7
Cornelius, Carol. *Polka Dots, Checks, and Stripes* 113
Crews, Donald. *Ten Black Dots* 48
Crowther, Robert. *The Most Amazing Hide-and-Seek Counting Book* 63
Curry, Peter. *One, Two, Three* 38
Cushman, Jean. *Do You Wanna Bet? Your Chance to Find Out about Probability* 104

Davis, Jim. *Garfield Counts to Ten* 7
Dee, Ruby. *Two Ways to Count to Ten* 27
Demi. *Demi's Count the Animals 1-2-3* 38
_____. *Where Is It? A Hide-and-Seek Puzzle Book* 197
Dennis, Richard. *Fractions Are Parts of Things* 76
de Regniers, Beatrice Schenk. *So Many Cats!* 55
Diggins, Julia E. *String, Straightedge, and Shadow: The Story of Geometry* 198
Dilson, Jesse. *The Abacus: A Pocket Computer* 91
Donovan, Frank. *Let's Go Metric* 146
Dr. Seuss. *Shape of Me and Other Stuff* 185
Dunn, Phoebe, and Vincent B. Lee. *How Many?* 39
Dunrea, Olivier. *Deep Down Underground* 21
Dunworth, John, and Thomas Drysdale. *Millions of People* 104

Edmonds, Jane, and Mark Sachner. *Time!* 154
Ehlert, Lois. *Color Zoo* 186
_____. *Fish Eyes: A Book You Can Count On* 56
Eichenberg, Fritz. *Dancing in the Moon: Counting Rhymes* 39
Elkin, Benjamin. *Money* 173
Emberley, Ed. *Ed Emberley's Big Green Drawing Book* 213
_____. *Ed Emberley's Big Orange Drawing Book* 214
_____. *Ed Emberley's Big Purple Drawing Book* 214
_____. *Ed Emberley's Big Red Drawing Book* 214
_____. *Ed Emberley's Great Thumbprint Drawing Book* 215
_____. *The Wing on a Flea: A Book about Shapes* 186
Emberley, Rebecca. *Drawing with Numbers and Letters* 215
Ernst, Lisa Campbell. *Up to Ten and Down Again* 8

Feelings, Muriel. *Moja Means One: A Swahili Counting Book* 27
Fehr, Howard. *Number Patterns Make Sense* 113
Fey, James. *Long, Short, High, Low, Thin, Wide* 147
Fisher, Leonard Everett. *Boxes! Boxes!* 186
_____. *Calendar Art: Thirteen Days, Weeks, Months, Years from around the World* 169
_____. *Look Around! A Book about Shapes* 187
_____. *Number Art: Thirteen 1 2 3s from around the World* 92
Florian, Douglas. *A Summer Day* 161
Fowler, Richard. *Mr. Little's Noisy 1, 2, 3* 39
Frédérique and Papy. *Graph Games* 114
Friskey, Margaret. *Chicken Little, Count-to-Ten* 8
Froman, Robert. *Angles Are Easy As Pie* 198
_____. *Bigger and Smaller* 147

_____. *A Game of Functions* 114
_____. *The Greatest Guessing Game: A Book about Dividing* 99
_____. *Less Than Nothing Is Really Something* 76
_____. *Rubber Bands, Baseballs, and Doughnuts: A Book about Topology* 199
_____. *Venn Diagrams* 122
Füchshuber, Annegert. *Ten Cuckoo-Clock Cuckoo* 154
Fujikawa, Gyo. *Ten Little Babies* 56

Gardner, Beau. *Can You Imagine. ..? A Counting Book* 49
_____. *The Turn About, Think About, Look About Book* 199
_____. *What Is It? A Spin-About Book* 187
Gerstein, Mordicai. *Roll Over!* 22
_____. *The Sun's Day* 161
Gersting, Judith L., and Joseph E. Kuczkowski. *Yes-No, Stop-Go: Some Patterns in Mathematical Logic* 122
Giganti, Paul, Jr. *How Many Snails? A Counting Book* 63
Gillen, Patricia Bellan. *My Signing Book of Numbers* 76
Gillham, Bill, and Susan Hulme. *Let's Look for Numbers* 8
_____. *Let's Look for Shapes* 187
Goldborough, June. *Numbers* 9
Gould, Deborah. *Brendan's Best-timed Birthday* 162
Gould, Ellen. *The Blue Number Counting Book* 34
Gray, Catherine. *One, Two, Three, and Four—No More?* 22
Greenfield, Eloise. *Big Friend, Little Friend* 136
Gretz, Susanna. *Teddy Bears 1 to 10* 56
Grey, Judith. *What Time Is It?* 155
Grossman, Virginia, and Sylvia Long. *Ten Little Rabbits* 28
Gundersheimer, Karen. *1 2 3 Play with Me* 9

Haas, Dorothy. *The Hugs and Tugs Counting Book* 9
Haley, Gail. *One, Two, Buckle My Shoe: A Book of Counting Rhymes* 22
Haney, Jan P. *Calculators* 128
Harada, Joyce. *It's the 0-1-2-3 Book* 77
Haskins, Jim. *Count Your Way through Africa* 28
_____. *Count Your Way through Canada* 29
_____. *Count Your Way through China* 29
_____. *Count Your Way through Japan* 29
_____. *Count Your Way through Korea* 30
_____. *Count Your Way through Mexico* 30
_____. *Count Your Way through Russia* 30
_____. *Count Your Way through the Arab World* 31
Hawkins, Colin. *Adding Animals* 99

_____. *Take Away Monsters* 99
Hawkins, Colin, and Jacqui Hawkins. *How Many Are in This Old Car? A Counting Book* 57
Hayes, Cyril, and Dympna Hayes. *Number Mysteries* 114
Heath, Royal Vale. *MatheMagic: Magic, Puzzles, and Games with Numbers* 115
Hellen, Nancy. *The Bus Stop* 77
Hill, Eric. *Spot Looks at Opposites* 179
Hoban, Russell. *Ten What? A Mystery Counting Book* 52
Hoban, Tana. *All about Where* 179
_____. *Circles, Triangles, and Squares* 188
_____. *Count and See* 44
_____. *Exactly the Opposite* 136
_____. *Is It Larger? Is It Smaller?* 137
_____. *Is It Red? Is It Yellow? Is It Blue?* 123
_____. *Is It Rough? Is It Smooth? Is It Shiny?* 123
_____. *Of Colors and Things* 123
_____. *1, 2, 3* 10
_____. *Over, Under, and Through and Other Spatial Concepts* 180
_____. *Push, Pull, Empty, Full: A Book of Opposites* 137
_____. *Round and Round and Round* 188
_____. *Shadows and Reflections* 199
_____. *Shapes and Things* 188
_____. *Shapes, Shapes, Shapes* 188
_____. *Twenty-six Letters and Ninety-nine Cents* 174
Holabird, Katharine. *The Little Mouse 1 2 3* 64
Holland, Penny. *Looking at Computer Programming* 129
Hooper, Meredith. *Seven Eggs* 77
Howard, Katherine. *I Can Count to One Hundred...Can You?* 45
Hughes, Shirley. *Lucy and Tom's 1. 2. 3* 78
_____. *When We Went to the Park* 10
Hutchins, Pat. *The Doorbell Rang* 100
_____. *One Hunter* 10
Hyman, Jane. *The Gumby Book of Numbers* 10
Hynard, Julia. *Percival's Party* 64

Inkpen, Mike. *One Bear at Bedtime* 11

James, Elizabeth, and Carol Barkin. *Managing Your Money* 174
_____. *What Do You Mean by "Average"? Means, Medians, and Modes* 105
Jennings, Terry. *Time* 169
Johnston, Tony. *Whale Song* 11

Kahn, Peggy. *The Care Bears' Circus of Shapes* 189

Katz, Bobbi. *Ten Little Care Bears Counting Book* 11

_____. *Tick-Tock, Let's Read the Clock* 154

Keller, Holly. *Ten Sleepy Sheep* 11

Kherdian, David, and Nonny Hogrogian. *The Cat's Midsummer Jamboree* 78

_____. *Right Now* 162

Killingback, Julia. *One, Two, Three, Go!* 12

_____. *What Time Is It, Mrs. Bear?* 155

Kilroy, Sally. *The Baron's Hunting Party* 40

_____. *Copycat Drawing Book* 215

Kingsley, Emily Perl, Jeffrey Moss, Norman Stiles, and Daniel Wilcox. *Sesame Street One, Two, Three Story Book* 64

Kirst, Werner. *Time* 170

Kitchen, Bert. *Animal Numbers* 40

Koch, Michelle. *Just One More* 49

Koontz, Robin Michal. *This Old Man, the Counting Song* 22

Kramer, Anthony Penta. *Numbers on Parade 0 to 10* 34

Kredenser, Gail. *One Dancing Drum* 52

Krensky, Stephen. *Big Time Bears* 162

Kyte, Kathy S. *The Kids' Complete Guide to Money* 174

Laithwaite, Eric. *Shape: The Purpose of Forms* 199

_____. *Size: The Measure of Things* 148

Lamm, Joyce. *Let's Talk about the Metric System* 148

Langstaff, John. *Over in the Meadow* 23

Law, Felicia, and Suzanne Chandler. *Mouse Count!* 78

Leaf, Munro. *Metric Can Be Fun* 148

Lear, Peter. *Let's Look at Computer Play* 129

Lee, J. Douglas. *Animal 1*2*3!* 40

Leighton, Ralph, and Carl Feynman. *How to Count Sheep without Falling Asleep* 92

Leman, Martin. *Ten Cats and their Tales* 12

Le Sieg, Theo. *Ten Apples Up on Top* 12

_____. *Wacky Wednesday* 41

Lewin, Betsy. *Cat Count* 115

Linn, Charles F. *Estimation* 149

_____. *Probability* 105

Lionni, Leo. *Numbers to Talk About* 57

Lipscomb, Susan Drake, and Margaret Ann Zuanich. *BASIC Fun: Computer Games, Puzzles, and Problems Children Can Write* 129

Lipson, Shelley. *It's BASIC: The ABC's of Computer Programming* 130

_____. *More BASIC: A Guide to Intermediate-Level Computer Programming* 130

Lloyd, Penny. *What Time Is It?* 163

Luce, Marnie. *One Is Unique* 79
_____. *Zero Is Something* 79
Lynn, Sara, and Rosalinda Kightley. *1 2 3* 13

MacDonald, Elizabeth. *Mike's Kite* 13
MacDonald, Suse, and Bill Oakes. *Numblers* 13
_____. *Puzzlers* 180
McDonnell, Janet. *Polka-Dot Puppy's New House* 34
McGough, Roger. *Counting by Numbers* 41
Mack, Stan. *Ten Bears in My Bed* 23
Mackie, Dean, and David Mackie. *Let's Look at BASIC* 131
McKissack, Patricia C. *A Million Fish … More or Less* 79
McLeod, Emilie Warren. *One Snail and Me* 52
McMillan, Bruce. *Becca Backward, Becca Frontward* 180
_____. *Counting Wildflowers* 45
_____. *Eating Fractions* 80
_____. *Fire Engine Shapes* 189
_____. *One, Two, One Pair!* 80
_____. *Time to….* 156
Maestro, Betsy. *Harriet Goes to the Circus: A Number Concept Book* 80
_____. *Temperature and You* 149
Maestro, Betsy, and Giulio Maestro. *Dollars and Cents for Harriet* 175
_____. *Through the Year with Harriet* 163
Manley, Deborah. *Animals One to Ten* 65
_____. *The Other Side* 137
Manushkin, Fran. *Walt Disney's 101 Dalmatians: A Counting Book* 46
Marshall, Ray, and Paul Korky. *Libro animado de la resta* 101
Martin, Bill, Jr. *Optical Illusions* 210
Mathews, Louise. *Bunches and Bunches of Bunnies* 116
_____. *Cluck One* 81
_____. *Gator Pie* 81
_____. *The Great Take-Away* 101
Matthias, Catherine. *Too Many Balloons* 14
Miller, J. P. *Learn to Count with Little Rabbit* 14
Miller, Jane. *Farm Counting Book* 65
Mitgutch, Ali. *From Gold to Money* 175
Moerbeck, Kees, and Carla Dijs. *Six Brave Explorers* 101
Moncure, Jane Belk. *Apes Find Shapes* 189
_____. *The Biggest Snowball of All* 138
_____. *How Many Ways Can You Cut a Pie?* 81
_____. *Magic Monsters Count to Ten* 14
_____. *Magic Monsters Look for Shapes* 190

_____. *The Magic Moon Machine* 65
_____. *My Eight Book* 82
_____. *My Five Book* 83
_____. *My Four Book* 83
_____. *My Nine Book* 83
_____. *My One Book* 83
_____. *My Seven Book* 83
_____. *My Six Book* 84
_____. *My Ten Book* 84
_____. *My Three Book* 84
_____. *My Two Book* 85
_____. *One Tricky Monkey Up on Top* 66
_____. *Wise Owl's Days of the Week* 163
_____. *Wise Owl's Time Book* 156
Mori, Tuyosi. *Socrates and the Three Pigs* 106
Morozumi, Atsuko. *One Gorilla* 15
Morris, Ann. *Night Counting* 15
Murray, William D., and Francis J. Rigney. *Paper Folding for Beginners* 207
Myers, Bernice. *The Millionth Egg* 85
Myllar, Rolf. *How Big Is a Foot?* 149

Neasi, Barbara J. *A Minute Is a Minute* 164
Nesbit, E. *Melisande* 116
Noll, Sally. *Off and Counting* 15
Nozaki, Akihiro. *Anno's Hat Tricks* 124

Oechsli, Kelly. *Too Many Monkeys: A Counting Rhyme* 23
O'Donnell, Elizabeth Lee, and Karen Lee Schmidt. *The Twelve Days of Summer* 24
O'Halloran, Tim. *Know Your Numbers* 85
Orii, Eiji, and Masako Orii. *Simple Science Experiments with Circles* 200
Ormerod, Jan. *Young Joe* 49
Owen, Annie. *Annie's One to Ten* 53
Oxenbury, Helen. *Helen Oxenbury's Numbers of Things* 42

Paraquin, Charles H. *World's Best Optical Illusions* 211
Parker, Pat, and Teresa Kennedy. *Logo Fun* 131
Parker, Tom. *In One Day* 106
Peek, Merle. *Roll Over!* 24
Peppe, Rodney. *Circus Numbers* 42
Perry, Susan. *How Did We Get Clocks and Calendars?* 170
Petty, Kate. *Numbers* 132
Petty, Kate, and Lisa Kopper. *What's That Number?* 15

_____. *What's That Shape?* 190
_____. *What's That Size?* 138
Phillips, Jo. *Exploring Triangles: Paper-folding Geometry* 200
_____. *Right Angles: Paper-folding Geometry* 201
Phillips, Louis. *263 Brain Busters: Just How Smart Are You, Anyway?* 124
Pienkowski, Jan. *Numbers* 66
_____. *Shapes* 191
_____. *Sizes* 139
_____. *Time* 156
Pluckrose, Henry. *Big and Little* 139
_____. *Capacity* 150
_____. *Counting* 66
_____. *Length* 150
_____. *Numbers* 86
_____. *Pattern* 116
_____. *Shape* 191
_____. *Sorting* 125
_____. *Time* 164
_____. *Weight* 150
Pomerantz, Charlotte. *One Duck, Another Duck* 58
Potter, Beatrix. *Peter Rabbit's 1 2 3* 67
Punnett, Dick. *Count the Possums* 58
Pye, Sylvia E. Luckas. *Counting Animals with Jack: A 1–10 Number Picture Book* 16

Raffi. *Five Little Ducks* 24
Rees, Mary. *Ten in a Bed* 25
Reid, Margarette S. *The Button Box* 126
Reiss, John J. *Numbers* 42
_____. *Shapes* 191
Richards, Dorothy Fay. *Wise Owl's Counting Book* 46
Riedel, Manfred G. *Winning with Number: A Kid's Guide to Statistics* 107
Robinson, Nancy L. *Where Did My Little Fox Go?* 58
Robinson, Shari. *A First Number Book* 86
Rogers, Paul. *The Shapes Game* 192
Rosenberg, Amye. *1 to 100 Busy Counting Book* 87
Rothman, Joel. *A Moment in Time* 165
Roy, Cal. *Time Is Day* 157
Rubel, Nicole. *Pirate Jupiter and the Moondogs* 59
Russo, Marisabina. *Only Six More Days Left* 165

Sakade, Florence. *Origami, Japanese Paper Folding, Vol. 1* 207

_____. *Origami, Japanese Paper Folding, Vol. 2* 207
_____. *Origami, Japanese Paper Folding, Vol. 3* 208
Salt, Jane. *Shapes* 192
Samton, Sheila White. *The World from My Window: A Counting Poem* 25
Sarasas, Claude. *ABC's of Origami* 208
Saunders, Kenneth. *Hexagrams* 201
Scarry, Richard. *Richard Scarry's Best Counting Book Ever* 67
_____. *Short and Tall* 139
Schade, Susan. *The Noisy Counting Book* 16
Schneider, Herman, and Nina Schneider. *How Big Is Big?* 139
Schwartz, David M. *How Much Is a Million?* 87
_____. *If You Made a Million* 175
Schwerin, Doris. *The Tomorrow Book* 165
Sendak, Maurice. *Chicken Soup with Rice: A Book of Months* 166
_____. *One Was Johnny* 59
Serfozo, Mary. *Who Wants One?* 16
Seuss, Dr. *See* Dr. Seuss
Seymour, Peter. *Numbers* 67
Shapp, Martha, and Charles Shapp. *Let's Find Out about What's Big and What's Small* 140
_____. *Let's Find Out about What's Light and What's Heavy* 140
Sharp, Richard M., and Seymour Metzner. *The Sneaky Square and 113 Other Math Activities for Kids* 117
Shimek, William J. *The Liter* 151
Simon, Seymour. *The Optical Illusion Book* 211
Sis, Peter. *Beach Ball* 126
_____. *Going Up! A Color Counting Book* 88
_____. *Waving* 42
Sitomer, Mindel, and Harry Sitomer. *Circles* 201
_____. *How Did Numbers Begin?* 93
_____. *What Is Symmetry?* 202
_____. *Zero Is Not Nothing* 88
Spier, Peter. *Fast-Slow, High-Low: A Book of Opposites* 140
Srivastava, Jane Jonas. *Area* 151
_____. *Averages* 107
_____. *Number Families* 117
_____. *Spaces, Shapes, and Sizes* 152
_____. *Statistics* 108
_____. *Weighing and Balancing* 152
Stwertka, Eve, and Albert Stwertka. *Make It Graphic! Drawing Graphs for Science and Social Studies Projects* 108

Sugita, Yutaka. *Goodnight, 1, 2, 3* 46
Supraner, Robyn. *Stop and Look! Illusions* 211
Szekeres, Cyndy. *Cyndy Szekeres' Counting Book One to Ten* 59

Tafuri, Nancy. *Who's Counting?* 17
Takahama, Toshie. *Origami for Displays* 208
_____. *Origami for Fun* 208
_____. *Origami: Toys* 208
Testa, Fulvio. *If You Look around You* 202
_____. *If You Take a Pencil* 68
Tester, Sylvia R. *One Unicorn: A Counting Book* 17
_____. *Over, Under, and All Around* 181
Thompson, Carol. *Time* 157
Thompson, Susan L. *One More Thing, Dad* 17
Thomson, Ruth. *All about 1, 2, 3* 68
_____. *All about Shapes* 192
Trinca, Rod, and Kerry Argent. *One Woolly Wombat* 31
Trivett, Daphne H. *Shadow Geometry* 204
Trivett, Daphne, and John Trivett. *Time for Clocks* 157
Trivett, John V. *Building Tables on Tables: A Book about Multiplication* 102
Tompert, Ann. *Grandfather Tang's Story* 203
Tudor, Tasha. *One Is One* 43

Underhill, Liz. *1, 2, Tie Up My Shoe* 25

van der Meer, Ron, and Atie van der Meer. *Fun with Numbers: A Spinning Wheel Book* 68
_____. *Fun with Shapes : A Spinning Wheel Book* 193
Van Note, Peter. *Tangrams: Picture-making Puzzle Game* 204
Viorst, Judith. *Alexander Who Used to Be Rich Last Sunday* 176

Wadsworth, Olive A. *Over in the Meadow: A Counting-Out Rhyme* 25
Wahl, John, and Stacey Wahl. *I Can Count the Petals of a Flower* 69
Walt Disney Productions Staff. *Adventures with Letters and Numbers* 18
Walt Disney Productions. *Mickey's Counting Book* 47
Walter, Marion. *Look at Annette* 204
_____. *Make a Bigger Puddle, Make a Smaller Worm* 204
_____. *The Mirror Puzzle Book* 205
Ward, Cindy. *Cookie's Week* 166
Watson, Clyde. *Binary Numbers* 93
Weiss, Malcolm E. *666 Jellybeans! All That? An Introduction to Algebra* 118
_____. *Solomon Grundy, Born on Oneday: A Finite Arithmetic Puzzle* 93

Wells, Rosemary. *Max's Toys: A Counting Book* 18
West, Colin. *One Little Elephant* 26
_____. *Ten Little Crocodiles* 26
White, Laurence B., and Ray Broekel. *Optical Illusions* 212
Wildsmith, Brian. *Brian Wildsmith's 1, 2, 3's* 18
Winik, J. T. *Fun with Numbers* 35
Wood, A. J. *Animal Counting* 19
Woodard, James, and Linda Purdy. *One to Ten and Count Again* 19
Wylie, Joanne, and David Wylie. *Cuantos monstruos? Un cuenta de números* 69
_____. *How Many Monsters? Learning about Counting* 69

Yenawine, Philip. *Lines* 193
_____. *Shapes* 194
Yeoman, John. *Sixes and Sevens* 19
Youldon, Gillian. *Numbers* 50
_____. *Shapes* 194
_____. *Sizes* 141

Zaslavsky, Claudia. *Count on Your Fingers African Style* 31
_____. *Tic Tac Toe* 126
_____. *Zero: Is It Something? Is It Nothing?* 94
Ziegler, Sandra. *All of Grandmother's Clocks: A Beginning Book about Time* 158
Ziefert, Harriet. *A Dozen Dogs: A Read-and-Count Story* 60
Ziner, Feenie, and Elizabeth Thompson. *Time* 171

Index by Title

The Abacus: A Pocket Computer, Jesse Dilson 91
ABC's of Origami, Claude Sarasas 208
Adding Animals, Colin Hawkins 99
Adventures with Letters and Numbers, Walt Disney Productions Staff 18
Alexander Who Used to Be Rich Last Sunday, Judith Viorst 176
All about 1, 2, 3, Ruth Thomson 68
All about Shapes, Ruth Thomson 192
All about Where, Tana Hoban 179
All Kinds of Money, David A. Adler 172
All of Grandmother's Clocks: A Beginning Book about Time, Sandra Ziegler 158
Angles Are Easy As Pie, Robert Froman 198
Animal Counting, A. J. Wood 19
Animal Numbers, Bert Kitchen 40
*Animal 1*2*3!,* J. Douglas Lee 40
Animals One to Ten, Deborah Manley 65
Annie's One to Ten, Annie Owen 53
Anno's Counting Book, Mitsumasa Anno 33
Anno's Counting House, Mitsumasa Anno 51
Anno's Hat Tricks, Akihiro Nozaki 124
Anno's Math Games, Mitsumasa Anno 110
Anno's Math Games II, Mitsumasa Anno 111
Anno's Math Games III, Mitsumasa Anno 196
Anno's Mysterious Multiplying Jar, Masaichiro Anno and Mitsumasa Anno 110
Anno's Sundial, Mitsumasa Anno 167
Apes Find Shapes, Jane Belk Moncure 189
Area, Jane Jonas Srivastava 151
Averages, Jane Jonas Srivastava 107

Baby's First Counting Book 4
Bambi's First Counting Book 96

The Baron's Hunting Party, Sally Kilroy 40
Base Five, David A. Adler 90
BASIC Fun: Computer Games, Puzzles, and Problems Children Can Write, Susan Drake Lipscomb and Margaret Ann Zuanich 129
Beach Ball, Peter Sis 126
Bears on Wheels, Stanley Berenstain and Janice Berenstain 75
Becca Backward, Becca Frontward, Bruce McMillan 180
Big and Little, Henry Pluckrose 139
Big Friend, Little Friend, Eloise Greenfield 136
Big Time Bears, Stephen Krensky 162
Bigger and Smaller, Robert Froman 147
The Biggest Snowball of All, Jane Belk Moncure 138
Binary Numbers, Clyde Watson 93
The Blue Number Counting Book, Ellen Gould 34
The Book of Classic Board Games 120
Boxes! Boxes!, Leonard Everett Fisher 186
Brendan's Best-timed Birthday, Deborah Gould 162
Brian Wildsmith's 1, 2, 3's, Brian Wildsmith 18
Building Tables on Tables: A Book about Multiplication, John V. Trivett 102
Bunches and Bunches of Bunnies, Louise Mathews 116
The Bus Stop, Nancy Hellen 77
The Button Box, Margarette S. Reid 126

Calculator Fun, David A. Adler 95
Calculators, Jan P. Haney 128
Calendar Art: Thirteen Days, Weeks, Months, Years from around the World, Leonard Everett Fisher 169
Calendars, Necia H. Apfel 167
Calico Cat Looks Around, Donald Charles 184
Can You Imagine...? A Counting Book, Beau Gardner 49
Capacity, Henry Pluckrose 150
The Care Bears' Circus of Shapes, Peggy Kahn 189
The Cat's Midsummer Jamboree, David Kherdian and Nonny Hogrogian 78
Cat Count, Betsy Lewin 115
Charts and Graphs: Fun, Facts, and Activities, Caroline Arnold 103
Chicken Little, Count-to-Ten, Margaret Friskey 8
Chicken Soup with Rice: A Book of Months, Maurice Sendak 166
The Circle Sarah Drew, Peter Barrett and Susan Barrett 183
Circles, Mindel Sitomer and Harry Sitomer 201
Circles, Triangles, and Squares, Tana Hoban 188
Circus Numbers, Rodney Peppe 42
Cluck One, Louise Mathews 81

Color Zoo, Lois Ehlert 186
Cookie's Week, Cindy Ward 166
Copycat Drawing Book, Sally Kilroy 215
Count and See, Tana Hoban 44
Count on Your Fingers African Style, Claudia Zaslavsky 31
Count the Possums, Dick Punnett 58
Count Your Way through Africa, Jim Haskins 28
Count Your Way through Canada, Jim Haskins 29
Count Your Way through China, Jim Haskins 29
Count Your Way through Japan, Jim Haskins 29
Count Your Way through Korea, Jim Haskins 30
Count Your Way through Mexico, Jim Haskins 30
Count Your Way through Russia, Jim Haskins 30
Count Your Way through the Arab World, Jim Haskins 31
Count-a-saurus, Nancy Blumenthal 5
Counting, Henry Pluckrose 66
Counting Animals with Jack: A 1–10 Number Picture Book, Sylvia E. Luckas Pye 16
Counting by Numbers, Roger McGough 41
Counting on Frank, Rod Clement 146
Counting Sheep, John Archambault 4
Counting Wildflowers, Bruce McMillan 45
Cuantos monstruos? Un cuento de números, Joanne Wylie and David Wylie 69
Cyndy Szekeres' Counting Book One to Ten, Cyndy Szekeres 59

Dancing in the Moon: Counting Rhymes, Fritz Eichenberg 39
Deep Down Underground, Olivier Dunrea 21
Demi's Count the Animals 1-2-3, Demi 38
Disney's Pop-Up Book of Numbers 7
Disney's Pop-Up Book of Opposites 136
Disney's Pop-Up Book of Shapes 146
Do You Wanna Bet? Your Chance to Find Out about Probability, Jean Cushman 104
Dollars and Cents for Harriet, Betsy Maestro and Giulio Maestro 175
Domino Games, John Belton and Joella Cramblit 119
The Doorbell Rang, Pat Hutchins 100
A Dozen Dogs: A Read-and-Count Story, Harriet Ziefert 60
Drawing with Numbers and Letters, Rebecca Emberley 215

Eating Fractions, Bruce McMillan 80
Ed Emberley's Big Green Drawing Book, Ed Emberley 213
Ed Emberley's Big Orange Drawing Book, Ed Emberley 214
Ed Emberley's Big Purple Drawing Book, Ed Emberley 214

Ed Emberley's Big Red Drawing Book, Ed Emberley 214

Ed Emberley's Great Thumbprint Drawing Book, Ed Emberley 215

Ellipse, Mannis Charosh 196

Estimation, Charles F. Linn 149

Exactly the Opposite, Tana Hoban 136

Exploring Triangles: Paper-folding Geometry, Jo Phillips 200

Farm Counting Book, Jane Miller 65

Fast-Slow, High-Low: A Book of Opposites, Peter Spier 140

Fire Engine Shapes, Bruce McMillan 189

A First Number Book, Shari Robinson 86

Fish Eyes: A Book You Can Count On, Lois Ehlert 56

Five Little Ducks, Raffi 24

Five Little Monkeys Jumping on the Bed, Eileen Christelow 21

Five Little Monkeys Sitting in a Tree, Eileen Christelow 21

Fractions Are Parts of Things, Richard Dennis 76

From Gold to Money, Ali Mitgutch 175

Fun with Numbers, J. T. Winik 35

Fun with Numbers: A Spinning Wheel Book, Ron van der Meer and Atie van der Meer 68

Fun with Shapes : A Spinning Wheel Book, Ron van der Meer and Atie van der Meer 193

A Game of Functions, Robert Froman 114

Garfield Counts to Ten, Jim Davis 7

Gator Pie, Louise Mathews 81

Going Up! A Color Counting Book, Peter Sis 88

Goodnight, 1, 2, 3, Yutaka Sugita 46

Grandfather Tang's Story, Ann Tompert 203

Graph Games, Frédérique and Papy 114

The Great Optical Illusions, Gyles Brandreth 210

The Great Take-Away, Louise Mathews 101

The Greatest Guessing Game: A Book about Dividing, Robert Froman 99

The Gumby Book of Numbers, Jane Hyman 10

Harriet Goes to the Circus: A Number Concept Book, Betsy Maestro 80

Helen Oxenbury's Numbers of Things, Helen Oxenbury 42

Hexagrams, Kenneth Saunders 201

How Big Is a Foot?, Rolf Myllar 149

How Big Is Big?, Herman Schneider and Nina Schneider 139

How Did Numbers Begin?, Mindel Sitomer and Harry Sitomer 93

How Did We Get Clocks and Calendars?, Susan Perry 170

How Little and How Much: A Book about Scales, Franklyn M. Branley ... 145
How Many?, Phoebe Dunn and Vincent B. Lee ... 39
How Many Are in This Old Car? A Counting Book, Colin Hawkins and Jacqui Hawkins ... 57
How Many Bugs in a Box?, David A. Carter ... 6
How Many Monsters? Learning about Counting, Joanne Wylie and David Wylie ... 69
How Many Snails? A Counting Book, Paul Giganti, Jr. ... 63
How Many Ways Can You Cut a Pie?, Jane Belk Moncure ... 81
How Much Is a Million?, David M. Schwartz ... 87
How to Count Sheep without Falling Asleep, Ralph Leighton and Carl Feynman ... 92
The Hugs and Tugs Counting Book, Dorothy Haas ... 9

I Can Count, Dick Bruna ... 37
I Can Count More, Dick Bruna ... 37
I Can Count the Petals of a Flower, John Wahl and Stacey Wahl ... 69
I Can Count to One Hundred...Can You?, Katherine Howard ... 45
The I Hate Mathematics! Book, Marilyn Burns ... 112
I Know about Shapes, Dick Bruna ... 184
I Know More about Numbers, Dick Bruna ... 97
If You Look around You, Fulvio Testa ... 202
If You Made a Million, David M. Schwartz ... 175
If You Take a Pencil, Fulvio Testa ... 68
In One Day, Tom Parker ... 106
In the Garden, Eugene Booth ... 120
Is It Larger? Is It Smaller?, Tana Hoban ... 137
Is It Red? Is It Yellow? Is It Blue?, Tana Hoban ... 123
Is It Rough? Is It Smooth? Is It Shiny?, Tana Hoban ... 123
It's BASIC: The ABC's of Computer Programming, Shelley Lipson ... 130
It's the 0-1-2-3 Book, Joyce Harada ... 77
I've Got Your Number, John, Olive S. Berg ... 75

John Burningham's 1 2 3, John Burningham ... 55
Just Cats, John Burningham ... 62
Just in Time, Kathryn Cave and Terry McKenna ... 154
Just One More, Michelle Koch ... 49

The Kids' Complete Guide to Money, Kathy S. Kyte ... 174
Know Your Numbers, Tim O'Halloran ... 85

Learn to Count with Little Rabbit, J. P. Miller ... 14
Length, Henry Pluckrose ... 150

Less Than Nothing Is Really Something, Robert Froman 76
Let's Find Out about What's Big and What's Small, Martha Shapp and Charles Shapp 140
Let's Find Out about What's Light and What's Heavy, Martha Shapp and Charles Shapp 140
Let's Go Metric, Frank Donovan 146
Let's Look at BASIC, Dean Mackie and David Mackie 131
Let's Look at Computer Play, Peter Lear 129
Let's Look for Numbers, Bill Gillham and Susan Hulme 8
Let's Look for Shapes, Bill Gillham and Susan Hulme 187
Let's Paint a Rainbow, Eric Carle 98
Let's Talk about the Metric System, Joyce Lamm 148
Libro animado de la resta, Ray Marshall and Paul Korky 101
The Line Sophie Drew, Peter Barrett and Susan Barrett 183
Lines, Philip Yenawine 193
Listen to a Shape, Marcia Brown 183
The Liter, William J. Shimek 151
Little Elephant and Big Mouse, Benita Cantienti 136
The Little Mouse 1 2 3, Katharine Holabird 64
Little Simon 1, 2, 3, Mik Brown 96
Logic for Space Age Kids, Lyn McClure Butrick 121
Logo Fun, Pat Parker and Teresa Kennedy 131
Long, Short, High, Low, Thin, Wide, James Fey 147
Look Around! A Book about Shapes, Leonard Everett Fisher 187
Look at Annette, Marion Walter 204
Looking at Computer Programming, Penny Holland 129
Lucy and Tom's 1. 2. 3, Shirley Hughes 78

Magic Monsters Count to Ten, Jane Belk Moncure 14
Magic Monsters Look for Shapes, Jane Belk Moncure 190
The Magic Moon Machine, Jane Belk Moncure 65
Make a Bigger Puddle, Make a Smaller Worm, Marion Walter 204
Make It Graphic! Drawing Graphs for Science and Social Studies Projects, Eve Stwertka and Albert Stwertka 108
Making Metric Measurements, Neil Ardley 144
Managing Your Money, Elizabeth James and Carol Barkin 174
Math for Smarty Pants, Marilyn Burns 112
MatheMagic: Magic, Puzzles, and Games with Numbers, Royal Vale Heath 115
Mathematical Games for One and Two, Mannis Charosh 121
Max's Toys: A Counting Book, Rosemary Wells 18
Measure with Metric, Franklyn M. Branley 145
Measurements: Fun, Facts, and Activities, Caroline Arnold 144

Measuring, Richard L. Allington and Kathleen Krull 143
Metric Can Be Fun, Munro Leaf 148
Mickey's Counting Book, Walt Disney Productions 47
Mike's Kite, Elizabeth MacDonald 13
A Million Fish ... More or Less, Patricia C. McKissack 79
Millions of People, John Dunworth and Thomas Drysdale 104
The Millionth Egg, Bernice Myers 85
A Minute Is a Minute, Barbara J. Neasi 164
The Mirror Puzzle Book, Marion Walter 205
Moja Means One: A Swahili Counting Book, Muriel Feelings 27
A Moment in Time, Joel Rothman 165
Money, Audrey Briers 172
Money, Benjamin Elkin 173
Money and Banking, Lois Cantwell 173
More BASIC: A Guide to Intermediate-Level Computer Programming, Shelley Lipson 130
The Most Amazing Hide-and-Seek Counting Book, Robert Crowther 63
Mouse Count!, Felicia Law and Suzanne Chandler 78
Mr Archimedes' Bath, Pamela Allen 143
Mr. Little's Noisy 1, 2, 3, Richard Fowler 39
My Eight Book, Jane Belk Moncure 82
My First Look at Counting 85
My First Look at Numbers 41
My First Look at Sizes 138
My First Look at Sorting 124
My First Look at Time 164
My First 1, 2, 3 Book, Sebastion Conran 38
My Five Book, Jane Belk Moncure 83
My Four Book, Jane Belk Moncure 83
My Nine Book, Jane Belk Moncure 83
My One Book, Jane Belk Moncure 83
My Red Umbrella, Robert Bright 5
My Seven Book, Jane Belk Moncure 83
My Signing Book of Numbers, Patricia Bellan Gillen 76
My Six Book, Jane Belk Moncure 84
My Ten Book, Jane Belk Moncure 84
My Three Book, Jane Belk Moncure 84
My Two Book, Jane Belk Moncure 85
My Very First Book of Colors, Eric Carle 121
My Very First Book of Numbers, Eric Carle 63
My Very First Book of Shapes, Eric Carle 184

Night Counting, Ann Morris ... 15
The Noisy Counting Book, Susan Schade ... 16
Number Art: Thirteen 1 2 3s from Around the World, Leonard Everett Fisher ... 92
Number Families, Jane Jonas Srivastava ... 117
Number Ideas through Pictures, Mannis Charosh ... 113
Number Mysteries, Cyril Hayes and Dympna Hayes ... 114
Number Patterns Make Sense, Howard Fehr ... 113
Numbers, Richard L. Allington ... 62
Numbers, Philip Carona ... 91
Numbers, June Goldborough ... 9
Numbers, Kate Petty ... 132
Numbers, Jan Pienkowski ... 66
Numbers, Henry Pluckrose ... 86
Numbers, John J. Reiss ... 42
Numbers, Peter Seymour ... 67
Numbers, Gillian Youldon ... 50
Numbers: A First Counting Book, Robert Allen ... 61
Numbers on Parade 0 to 10, Anthony Penta Kramer ... 34
Numbers to Talk About, Leo Lionni ... 57
Numblers, Suse MacDonald and Bill Oakes ... 13

The Oak Tree, Laura Jane Coats ... 161
Of Colors and Things, Tana Hoban ... 123
Off and Counting, Sally Noll ... 15
One Bear All Alone, Caroline Bucknall ... 54
One Bear at Bedtime, Mike Inkpen ... 11
One Crow: A Counting Rhyme, Jim Aylesworth ... 33
One Dancing Drum, Gail Kredenser ... 52
One Duck, Another Duck, Charlotte Pomerantz ... 58
One Gorilla, Atsuko Morozumi ... 15
One Hunter, Pat Hutchins ... 10
One Is One, Tasha Tudor ... 43
One Is Unique, Marnie Luce ... 79
One Little Elephant, Colin West ... 26
One Little Monkey, Stephanie Calmenson ... 6
One More Thing, Dad, Susan L. Thompson ... 17
One Snail and Me, Emilie Warren McLeod ... 52
1 to 100 Busy Counting Book, Amye Rosenberg ... 87
One to Ten and Count Again, James Woodard and Linda Purdy ... 19
One Tricky Monkey Up on Top, Jane Belk Moncure ... 66
One, Two, Buckle My Shoe: A Book Of Counting Rhymes,
Rowan Barnes-Murphy ... 20

One, Two, Buckle My Shoe: A Book Of Counting Rhymes, Gail Haley 22
One, Two, One Pair!, Bruce McMillan 80
One, Two, Three, Peter Curry 38
1, 2, 3, Tana Hoban 10
1 2 3, Sara Lynn and Rosalinda Kightley 13
One Two Three: An Animal Counting Book, Marc Brown 37
One, Two, Three, and Four—No More?, Catherine Gray 22
One, Two, Three, Go!, Julia Killingback 12
1 2 3 Play with Me, Karen Gundersheimer 9
1, 2, 3 to the Zoo, Eric Carle 6
1, 2, Tie Up My Shoe, Liz Underhill 25
One Unicorn: A Counting Book, Sylvia R. Tester 17
One Was Johnny, Maurice Sendak 59
One Woolly Wombat, Rod Trinca and Kerry Argent 31
Only Six More Days Left, Marisabina Russo 165
Opposites, Richard L. Allington 135
Opt: An Illusionary Tale, Arline Baum and Joseph Baum 210
The Optical Illusion Book, Seymour Simon 211
Optical Illusions, Bill Martin, Jr. 210
Optical Illusions, Laurence B. White and Ray Broekel 212
Origami for Displays, Toshie Takahama 208
Origami for Fun, Toshie Takahama 208
Origami in the Classroom, Book I, Chiyo Araki 206
Origami in the Classroom, Book II, Chiyo Araki 206
Origami, Japanese Paper Folding, Volume 1, Florence Sakade 207
Origami, Japanese Paper Folding, Volume 2, Florence Sakade 207
Origami, Japanese Paper Folding, Volume 3, Florence Sakade 208
Origami: Toys, Toshie Takahama 208
The Other Side, Deborah Manley 137
Over in the Meadow, John Langstaff 23
Over in the Meadow: A Counting-Out Rhyme, Olive A. Wadsworth 25
Over, Under, and All Around, Sylvia R. Tester 181
Over, Under, and Through and Other Spatial Concepts, Tana Hoban 180

Paper Folding for Beginners, William D. Murray and Francis J. Rigney 207
Pattern, Henry Pluckrose 116
Percival's Party, Julia Hynard 64
Peter Rabbit's 1 2 3, Beatrix Potter 67
Pigs Plus, John Burningham 97
Pirate Jupiter and the Moondoogs, Nicole Rubel 59
The Poky Little Puppy's Counting Book, Jean Chandler 7
Polka Dots, Checks, and Stripes, Carol Cornelius 113

Polka-Dot Puppy's New House, Janet McDonnell 34
Probability, Charles F. Linn 105
Push, Pull, Empty, Full: A Book of Opposites, Tana Hoban 137
Puzzle Maps U.S.A., Nancy Clouse 185
Puzzlers, Suse MacDonald and Bill Oakes 180

Richard Scarry's Best Counting Book Ever, Richard Scarry 67
Ride Off, John Burningham 97
Right Angles: Paper-folding Geometry, Jo Phillips 201
Right Now, David Kherdian and Nonny Hogrogian 162
Roll Over!, Mordicai Gerstein 22
Roll Over!, Merle Peek 24
Roman Numerals, David A. Adler 91
Rooster's Off to See the World, Eric Carle 48
Round and Round and Round, Tana Hoban 188
Rubber Bands, Baseballs, and Doughnuts: A Book about Topology,
  Robert Froman 199

The Saggy Baggy Elephant's Great Big Counting Book, Manny Campana 37
Sesame Street One, Two, Three Story Book, Emily Perl Kingsley, Jeffrey Moss,
  Norman Stiles and Daniel Wilcox 64
Seven Eggs, Meredith Hooper 77
Seven Little Rabbits, John Becker 54
Shadow Geometry, Daphne H. Trivett 204
Shadows and Reflections, Tana Hoban 199
Shape, Henry Pluckrose 191
Shape of Me and Other Stuff, Dr. Seuss 185
Shape: The Purpose of Forms, Eric Laithwaite 199
Shapes, Richard L. Allington 182
Shapes, Jan Pienkowski 191
Shapes, John J. Reiss 191
Shapes, Jane Salt 192
Shapes, Philip Yenawine 194
Shapes, Gillian Youldon 194
Shapes and Things, Tana Hoban 188
The Shapes Game, Paul Rogers 192
Shapes, Shapes, Shapes, Tana Hoban 188
Short and Tall, Richard Scarry 139
Simple Science Experiments with Circles, Eiji Orii and Masako Orii 200
Six Brave Explorers, Kees Moerbeck and Carla Dijs 101
Sixes and Sevens, John Yeoman 19
666 Jellybeans! All That? An Introduction to Algebra, Malcolm C. Weiss 118
Size: The Measure of Things, Eric Laithwaite 148

Sizes, Jan Pienkowski 139
Sizes, Gillian Youldon 141
The Sneaky Square and 113 Other Math Activities for Kids, Richard M. Sharp and Seymour Metzner 117
Snow Parade, Barbara Brenner 36
So Many Cats!, Beatrice Schenk de Regniers 55
Socrates and the Three Pigs, Tuyosi Mori 106
Solomon Grundy, Born on Oneday: A Finite Arithmetic Puzzle, Malcolm E. Weiss 93
Sorting, Henry Pluckrose 125
Spaces, Shapes, and Sizes, Jane Jonas Srivastava 152
Spot Looks at Opposites, Eric Hill 179
The Square Ben Drew, Peter Barrett and Susan Barrett 183
Statistics, Jane Jonas Srivastava 108
Stop and Look! Illusions, Robyn Supraner 211
Story of Our Calendar, Ruth Brindze 169
Straight Lines, Parallel Lines, Perpendicular Lines, Mannis Charosh 197
String, Straightedge, and Shadow: The Story of Geometry, Julia E. Diggins 198
A Summer Day, Douglas Florian 161
The Sun's Day, Mordicai Gerstein 161

Take Another Look, Edward Carini 210
Take Away Monsters, Colin Hawkins 99
Tangrams: Picture-making Puzzle Game, Peter Van Note 204
Teddy Bears 1 to 10, Susanna Gretz 56
Temperature and You, Betsy Maestro 149
Ten Apples Up on Top, Theo Le Sieg 12
Ten Bears in My Bed, Stan Mack 23
Ten Black Dots, Donald Crews 48
Ten Cats and their Tales, Martin Leman 12
Ten Cuckoo-Clock Cuckoo, Annegert Füchshuber 154
Ten Furry Monsters, Stephanie Calmenson 55
Ten in a Bed, Mary Rees 25
Ten Little Babies, Gyo Fujikawa 56
Ten Little Care Bears Counting Book, Bobbi Katz 11
Ten Little Crocodiles, Colin West 26
Ten Little Rabbits, Virginia Grossman and Sylvia Long 28
Ten, Nine, Eight, Molly Bang 5
Ten Sleepy Sheep, Holly Keller 11
Ten What? A Mystery Counting Book, Russell Hoban 52
Think Metric!, Franklyn M. Branley 145
Thinking, Richard L. Allington and Kathleen Krull 119

This Book Is about Time, Marilyn Burns 160
This Old Man, the Counting Song, Robin Michal Koontz 22
Three-D, Two-D, One-D, David A. Adler 195
Through the Year with Harriet, Betsy Maestro and Giulio Maestro 163
Tic Tac Toe, Claudia Zaslavsky 126
Tick-Tock, Let's Read the Clock, Bobbi Katz 154
Time, Richard L. Allington and Kathleen Krull 159
Time! Jane Edmonds and Mark Sachner 154
Time, Terry Jennings 169
Time, Werner Kirst 170
Time, Jan Pienkowski 156
Time, Henry Pluckrose 164
Time, Carol Thompson 157
Time, Feenie Ziner and Elizabeth Thompson 171
Time and Clocks, Herta S. Breiter 168
The Time Book, John Cassidy 153
Time for Clocks, Daphne Trivett and John Trivett 157
Time Is Day, Cal Roy 157
Time to..., Bruce McMillan 156
The Tomorrow Book, Doris Schwerin 165
Too Many Balloons, Catherine Matthias 14
Too Many Eggs, M. Christina Butler 98
Too Many Monkeys: A Counting Rhyme, Kelly Oechsli 23
Topsy-Turvies: Pictures to Stretch the Imagination, Mitsumasa Anno 209
The Turn About, Think About, Look About Book, Beau Gardner 199
The Twelve Days of Christmas, Jan Brett 20
The Twelve Days of Summer, Elizabeth Lee O'Donnell and Karen Lee Schmidt 24
Twenty-six Letters and Ninety-nine Cents, Tana Hoban 174
Two Ways to Count to Ten, Ruby Dee 27
263 Brain Busters: Just How Smart Are You, Anyway?, Louis Phillips 124

Up to Ten and Down Again, Lisa Campbell Ernst 8
Upside-Downers, Mitsumasa Anno 209

Venn Diagrams, Robert Froman 122
The Very Hungry Caterpillar, Eric Carle 160

Wacky Wednesday, Theo Le Sieg 41
Walt Disney's 101 Dalmatians: A Counting Book, Fran Manushkin 46
Waving, Peter Sis 42
Weighing and Balancing, Jane Jonas Srivastava 152
Weight, Henry Pluckrose 150

Whale Song, Tony Johnston 11
What Comes in 2's, 3's, and 4's, Suzanne Aker 4
What Do You Mean by "Average"? Means, Medians, and Modes, Elizabeth James and Carol Barkin 105
What Is It? A Spin-About Book, Beau Gardner 187
What Is Symmetry?, Mindel Sitomer and Harry Sitomer 202
What Number Now?, Grahame Corbett 7
What Time Is It?, Judith Grey 155
What Time Is It?, Penny Lloyd 163
What Time Is It around the World?, Hans Baumann 168
What Time Is It, Mrs. Bear?, Julia Killingback 155
What's That Number?, Kate Petty and Lisa Kopper 15
What's That Shape?, Kate Petty and Lisa Kopper 190
What's That Size?, Kate Petty and Lisa Kopper 138
When We Went to the Park, Shirley Hughes 10
Where Did My Little Fox Go?, Nancy L. Robinson 58
Where Is It? A Hide-and-Seek Puzzle Book, Demi 197
Who Wants One?, Mary Serfozo 16
Who's Counting?, Nancy Tafuri 17
The Wing on a Flea: A Book about Shapes, Ed Emberley 186
Winning with Number: A Kid's Guide to Statistics, Manfred G. Riedel 107
Wise Owl's Counting Book, Dorothy Fay Richards 46
Wise Owl's Days of the Week, Jane Belk Moncure 163
Wise Owl's Time Book, Jane Belk Moncure 156
The World from My Window: A Counting Poem, Sheila White Samton 25
World's Best Optical Illusions, Charles H. Paraquin 211

Yes-No, Stop-Go: Some Patterns in Mathematical Logic, Judith L. Gersting and Joseph E. Kuczkowski 122
Young Joe, Jan Ormorod 49

Zero: Is It Something? Is It Nothing?, Claudia Zaslavsky 94
Zero Is Not Nothing, Mindel Sitomer and Harry Sitomer 88
Zero Is Something, Marnie Luce 79

422